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ABSTRACT

Projects funded under Title III of the Elementary and Secondary Education Act (ESEA) are discussed, with the focus on individualized instruction projects. The locale of the projects varies from Texas to Chicago, New Jersey to California, Kentucky to Minnesota, and others. The topics of some of the projects are pre-school students, handicapped students, personalized instruction, rural schools, mathematics and technology, and project dissemination, all as they relate to individualized instruction. The two final articles deal with evaluation approaches to the validated projects and the general worth of the projects. (WH)

The Title III Quarterly

Summer 1974

**INDIVIDUALIZED
INSTRUCTION
ESEA TITLE III
PROJECTS
IN THE NATION'S
SCHOOLS**

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Individualized Instruction ESEA Title III Projects in the Nation's Schools

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Each issue of *The Title III Quarterly* focuses on projects funded under Title III of the Elementary and Secondary Education Act. In keeping with Title III's main directive — to fund innovative projects — the National Advisory Council on Supplementary Centers and Services investigates in the Quarters how well the projects are meeting the challenge of finding innovative solutions to their educational problems. Costs of this publication were satisfied under ESEA Title III. Views expressed herein do not necessarily reflect the policy of the U.S. Office of Education. Additional information concerning specific projects may be requested from the project directors.

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Foreword

J. Frank Troy
Member, National Advisory Council

Individualized instruction rates as a top priority among local school districts, particularly when they determine their most critical needs. So it is in Title III projects. We found in working on this Quarterly that individualized instruction, or diagnostic instruction, or personalized instruction is frequently listed as a top objective by which districts hope to reach the non-reader, the "turned-off-by-math" student, the very young learner, the "average" student with a particular problem.

Increasingly, districts are recognizing that a number of ways can be used to enable a child to learn; *which way* seems to depend on *which child*. Another fact emerges from even a casual look at Title III projects in individualized instruction: Teachers and administrators rate as much attention as the students. Before they can be expected to adopt whatever strategy is to be used, they must be trained, reeducated and enthused about the process. One project makes the point that teachers must understand their role as a "manager in a child centered environment."

Articles on two projects complement each other by showing how teachers can use classroom management techniques to better organize their classrooms, their students and their style of teaching. U-Sail developed the model in Salt Lake City. It moved across state lines and was adopted by an Arizona project, with only minor modification to fit Arizona's somewhat different social and cultural milieu.

Teaching teachers how to reach each student through a seven-step diagnostic model has been the objective of a Kentucky-based Learning Center for Diagnostic Instruction, and in Minnesota, a Title III project set up a cooperative linkage system for 25 schools using IGE (Individually Guided Education).

Another approach is taken in several of the projects where students and teachers learn together how instruc-

tion can be individualized. Operating out of the laboratory-like settings of Pre-Algebra Development Centers, a Chicago project prepares eighth graders for algebra instruction and provides teachers with a living, learning laboratory. Similarly, a San Diego project enables teachers to be trained during a summer session for working with multiage groupings of children. In this as well as several other projects, grouping children turns out to be an important concept in meeting individual needs.

Two math teachers from Arnold, Neb., have taken advantage of the students' TV viewing habits by offering individually paced instruction via Videotape Mathematics. Another project in "Individualized Instruction in Family Living" offers project-developed curriculum unipacs in answer to student concerns ranging from "Living with Your Parents and Liking It" to "Human Reproduction and Birth."

A New Jersey project is using cadre teams to train classroom teachers in how to provide physical education to children who are mainstreamed into regular school programs. As with most individualization efforts the teachers must be taught to diagnose, prescribe, assist, guide and serve as a resource person to each child.

A key factor emerging in the featured projects is flexibility—for the teacher, for the student, in curriculum materials and approach, in the learning environment and in time schedules. To illustrate: a network of demonstration schools in Texas offers educators from that state a chance to see more than 50 different programs in operation.

As part of this Quarterly, we are reprinting Frances Klein's critique of the 18 Title III projects that were validated in the area of individualized instruction in 1973. Also featured is a Special Survey of the validated projects to determine their current status, the rate of adoption/adaption by other school districts, and the degree of effectiveness.

Individualization, The Texas Way

Individualized instruction is receiving a lot of attention in Texas, thanks to the effort of a network of Demonstration Schools in Individualized Instruction (DSII) and a Title III-funded project. The DSII network and the project work together to assist schools in making the network known to Texas educators and in assisting them in putting to use any ideas for individualizing instruction that result from visitation to a network school.

The Title III project's title indicates that its specific purpose is to "Develop and Test Follow-Through Techniques for Encouraging DSII Visitors to Initiate Individualized Instruction Programs After Visitation."

Texas Education Agency (TEA) and the project cooperated in a joint study on how well the project is succeeding with its goal. Results of the study indicate that more than 5,000 persons visited 58 participating DSII schools around the state during 1972-73. A follow-up questionnaire completed by 900 of the visitors indicated that 78 percent of them had incorporated at least one change into their own school program as a result of a visit to a DSII school.

Current developments in the network schools are featured in the bimonthly news sheet, available through the Office of Planning, Division of Dissemination, Texas Education Agency (201 E. 11th St., Austin, Tex. 78701). A 28-minute videotape film explaining the purpose and scope of the network, is dubbed by TEA for any district that requests the service (and supplies the videotape). A comprehensive, annual guide published by TEA in cooperation with the project gives information on all schools in the

network, describes the approach used to individualize instruction and the grade levels affected, and gives the name of a contact person at each school.

How DSII Operates

The DSII network began operation in January 1972 with 35 participating schools. During 1973-74, the number of schools increased to 59 and the number of visitors more than doubled. Each school in the network goes through a process of selection and validation which allows it to participate in the network as a demonstration site for one year. If the school wants to participate beyond that time, it must be reevaluated.

The network operates under the direction of a 10-member Steering Committee which includes representatives from the education service centers, the state department of education, regional laboratory, colleges and universities and local school districts. The Committee set up the following criteria to be used in selecting demonstration schools:

- Each school must have a successful program in which instruction is individualized.
- Planned evaluation procedures indicate effectiveness of the program in the school.
- The school has had an individualized program for at least one year.
- Teachers, administrators and community are supportive of the program.
- Facilities are such that visitors can be accommodated. Rooms are large enough so that a limited number of visitors can move about to observe the program. There is space for orientation.
- The school is interested in telling others about its program.
- The school plans to continue the program.

For more information on the Network, contact Patrick Martin, Coordinator, DSII Network, Office of Planning, Division of Dissemination, Texas Education Agency, 201 E. 11th St., Austin, Texas 78701.

The Steering Committee specifically notes that it does not consider individualized instruction as a single uniform procedure. "In its simplest form, it is a system of organizing learning experiences around the individual needs of students, whether working alone or in groups. It is an approach for providing experiences which are compatible with each student's particular style of learning and for incorporating the student's skills and abilities in terms of knowledge acquired and knowledge desired."

The Committee says an individualized instruction program must contain the following elements: (1) a diverse array of goals and objectives, (2) a monitoring procedure that provides information about the current status of the learners and (3) the availability of many alternative methods for each learner to reach his objectives.

In terms of what individualized instruction should accomplish for children, the Committee specifies that a "working" program will provide students with an education that will help them to become "self-actualizing, self-evaluating, self-directing individuals who are concerned, capable and competent as they leave the public school of Texas."

An administrator who feels the individualized instruction program in his school meets the committee's guidelines may nominate the program for validation. In addition, nominations may be submitted by regional laboratories, colleges and universities, education service centers, or the state department of education. The administrator in a nominated program fills out a self-evaluation report which requires him to rate the elements found in the program by answering 18 questions, such as the amount of opportunity students have to exercise initiative in planning and implementing their own activities; whether the grouping pattern in use in the program allows for variety in size and purpose and frequent re-formation; whether individual learning needs are systematically diagnosed. The administrator rates each question on a scale ranging from 1 to 7.

Through the self-rating form, some administrators screen out their own programs early in the validation process. Completed forms are submitted to the Texas Education Agency for further screening by the Steering Committee.

A visiting team, appointed by the Committee, visits the nominated school as early as possible in the school year to see the program in operation. Each team member completes an evaluation instrument on-site. They are advised that their prime concern is to try to determine what is happening to the learner, how he reacts to the instruction and how it affects him. To do this, they must answer a number of questions which are broken down by the various elements to be found in an individualized instruction program. Some of the elements deal with the student's role in the program (e.g., the amount of autonomy and involvement for the learner, pacing, differentiation in assignments, patterns of grouping). Others deal with the teacher (e.g., staffing patterns, teaching strategies) or with the classroom (e.g., flexibility in arrangement, type and use of equipment and materials, classroom atmosphere). One question asks the evaluator to specify what evidence he has found that the program is successful.

Upon completion of their individual evaluations, team members are asked to come to a consensus on the program

and to submit one validation form to the Steering Committee.

Once a school is judged successful, it becomes a demonstration school in the DSII network. Visitors are encouraged to visit the school, but care is taken to make sure they do not disrupt the school's regular operation. For this reason, visits must be scheduled in advance. Each demonstration school provides an orientation to the form of individualized instruction in use so that the visitor will gain as much as possible from his tour. Time is provided for the visitors to ask questions and talk with the staff. This is an important part of an on-site visit, according to an evaluation by TEA of how well the network was working. When asked to specify what influenced them most during their on-site visit, more than half of 900 visitors answered "the attitudes of staff or school." "Actual demonstration of the program" received the next highest number of votes.

What Does a Visitor See?

Interested educators can see a wide variety of programs and approaches to individualized instruction in on-site visits to DSII schools. Hardware is seemingly unlimited in some; sparse in others. Some schools have individualized instruction by adopting textbooks, others make ample use of teacher-prepared materials. Some are concerned with entire learning systems which have been developed by commercial companies. Some programs operate in traditional little red schoolhouses; others operate from new, impressive buildings designed to meet the needs of specific forms of individualized instruction.

The important point is that the visitor can gain firsthand knowledge of what makes the particular program of individualized instruction work.

Descriptions of four programs follow. They illustrate what DSII is trying to show, i.e., individualized instruction can take many forms, in many different school settings. (Complete descriptions of all schools in the network are contained in the *Visitor's Guide to the 1974 Demonstration Schools in Individualized Instruction*, available from the Texas Education Agency, Office of Planning, 201 E. 11th St., Austin, Tex. 78701.)

Bedford Junior High

Overview: Bedford Junior High is part of the Hurst-Euless-Bedford Independent School District. (Contact Irwin Mathews, Principal, 325 Carolyn Dr., Bedford, Tex. 76021. Phone: 817/281-4940.) Subjects covered under individualized instruction include reading, mathematics and social studies.

Description: Bedford Junior High, with 1,100 students, features a spacious new building with two open, fresh-air courtyards set in natural surroundings. The hub of the campus is a fully equipped resource center complete with library, quiet study centers, and individual electronic study carrels. Adjacent to the resource center are three major classroom areas (featuring separate teacher work areas), a cafeteria with stage, and an extensive physical education complex.

The program consists of continuous progress programs in the seventh and eighth grades in math, English and social

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studies, featuring small group instruction coupled with team and group dynamics. The reading program features a continuous progress reading lab using a prescriptive individualized program of study skills involving two reading instructors and a special remedial teacher.

The program also features small group instruction, diagnostic and prescriptive programs, independent study, learning packets and computer assisted instruction. The school also participated in the Tyler ISD Title III follow-up program.

Reagan Elementary Learning Center

Overview: Reagan Elementary Learning Center is part of the Palestine Independent School District. (Contact Allen B. Gilchrest, Principal, 410 Micheaus St., Palestine, Tex. 75801. Phone: 214/729-1833.) The subjects covered under individualized instruction include mathematics, reading and language development.

Description: The Reagan program provides the opportunity for children who are experiencing learning difficulties to work toward optimum level through individualized instruction. It is for pupils who are not achieving grade level expectancy, the unchallenged accelerated learners, and those who show evidence of significant behavioral deviations. The staff members diagnose learning problems and prescribe individual educational plans to be implemented through prescriptive teaching. This provides a vehicle through which supplementary equipment and multi-sensory materials are used to meet individual needs.

Emphasis is on early identification of problems, adequate assessment and diagnosis, and appropriate educational plans to meet specific needs and thus enable each child to experience academic success in a child-centered environment free from academic and social pressures. Funds from Title I, ESEA, have contributed to this program.

Palo Alto Elementary

Overview: Palo Alto Elementary School is part of the South San Antonio Independent School District. (Contact Charlie Walker, Principal, 1725 Palo Alto Rd., San Antonio, Tex. 78211. Phone: 512/923-3871.)

Description: With an enrollment of 845 in grades K-6, this school is in a traditionally designed building with one open area wing addition. The instructional program includes the self-contained concept for kindergarten.

Using an eclectic approach to individualized instruction, the kindergarten offers both bilingual and regular programs to its 115 five-year-olds. Learning situations with

opportunities to make decisions are provided so that children gain confidence, improve self-image, and experience success during the first school year. Pupil initiative, responsibility and independent learning skills are developed, and individual needs are satisfied through the flexible use of special areas of interest in the self-contained classrooms. These include language (library/media), science and math, art, listening stations with cassette players and multiple sets of head phones. An outdoor activity center also is provided. While teachers instruct students in small groups or in one-to-one situations, aides provide necessary reinforcement or supervise learning centers.

Other features include individual diagnosis, independent study, contracts, small group instruction, a common planning period for teachers, and regularly scheduled parent conferences.

Funds from Title I, III, VII, ESEA, and Foundation School Program have contributed to this program.

Clear Spring Elementary

Overview: Clear Spring Elementary School is part of the North East Independent School District. (Contact Esther Pape, Principal, 4311 Clear Spring, San Antonio, Tex. 78217. Phone: 512/655-6055.) All subjects are individualized in grades K-5.

Description: Clear Spring is committed to the development of a healthy, positive self-image in each of its 650 children, facilitated by a staff-constructed philosophy stating that children can, should, and want to learn.

The staff strives for an open and integrated environment and for the refinement of individualization in all curriculum areas. The learning resource center is the focal point of the entire learning program for this open-area school. Team teaching with flexible groupings for specific individual needs, interests and abilities is the basis for the success-oriented, continuous progress program in all grades. The staff has developed a math program that individualizes all concepts and skills for unlimited progress and a continuum of the science and social studies program. A reporting system, compatible with the individualized program, has also been developed.

The school also uses contracts, self-directed learning or independent study, diagnostic and prescriptive programs, student self-appraisal, prescriptive speech program, language and learning development programs, parent involvement, exchange programs with other elementary and middle schools, student help in kindergarten, modular scheduling in upper grades, and student construction of behavioral objectives.

The program was aided by Title I ESEA funds.

Age Four: Prime Time for Individualization

Reproduced with permission from Belle Benchley Primary School. The scale is available for \$1 from the school (Belle Benchley Primary School, 7202 Princess View Drive, San Diego, Calif. 92120; make checks payable to San Diego Education Fund).

Welcome to Benchley School. We hope you will be caught up in the excitement of learning and that you will become involved with the children and their activities while you are here.

Benchley School really means that. Visitors are welcome. The teachers encourage all to join in. The students don't mind, particularly. They are already involved in their "free time" when the visitors enter the classroom. Each child is treated as an individual. Each is free at the beginning of the day to select whatever activity he wishes. He may work alone, with a partner, in a small group, with the teacher, a parent, an aide, or the visitor.

The activity period lasts for approximately an hour, although the schedule is flexible, as is the teaching style.

This is not the usual pattern for a school. But Benchley is not the usual school. For one thing, the children can start at Benchley at a much earlier age than usual in the public schools (age 3 years, 9 months) and in a group that also contains five- and six-year-olds. From this concept comes the name of a Title III project in San Diego, "Multiage Grouping in Early Childhood Education."

It started at Belle Benchley Primary School with a pilot program grouping children at the pre-K/K/1 level and now involves 810 children in 27 classrooms throughout the city. Belle Benchley, as the model school, enrolls 270 of the

target children in nine multiage classes: two classes at the pre-K/K/1 level; three at the K-1-2 level; and four at the 1-2-3-level. Interest in the project has risen tremendously since its initial days in 1970, particularly with the top-level backing for early childhood education by California State Supt. Wilson Riles.

The Rationale for Multiage Grouping

Whereas some other approaches to individualized instruction may tend to separate the children and to try to do everything in a sequential, businesslike fashion, that is not the idea behind multiage grouping. According to Project Assistant Tomaline Lenox, the school chose the multiage format because "it helps children and adults to break out of the constraints of grade-level thinking and to recognize each child as the unique individual he is."

The grouping of three different age levels in one class actually forces a new mode of operation on teachers. They find out that teaching a curriculum specifically tailored to each grade level is no longer feasible. Also gone is the approach which calls for the child to turn to a specific page of a specific book at a specific time. "Good things begin to happen for children; individualization begins when three grade levels are combined," according to Project Director Kenneth Hensell.

'Openness' in Spirit, in Being

When Benchley describes itself as an open school, it's talking about more than space or design. There is a noticeable scarcity of furniture (teachers are encouraged to sit on the floor with the students). The classroom door is open; there is no morning bell.

The teacher is important, because she determines the

Information for this article supplied by Tomaline S. Lenox, Project Assistant, Multiage Grouping in Early Childhood Education, San Diego.

learning environment. She can turn to resource staff for ways and means of making the multiage grouping work most effectively. Also, she receives preservice and inservice training covering a variety of philosophies and materials. But then she is turned loose to select what seems to best suit the needs of the students, and given a certain amount of money to pay for her selections (approximately \$950 was allotted to each teacher over a three-year period to buy manipulative learning materials and equipment).

Paid aides are available to each teacher, with the teacher making the selection. The additional staff and volunteers allow for more individualized attention and instruction. Male aides are involved whenever possible; fathers often come on their days off. Mrs. Lenox cites one instance that took place in an inner-city school when a young mother became ill and couldn't show up on her regular volunteer day. Her husband took her place as listener and tutor to a group of young children during their reading program.

Teachers receive help frequently from student teachers, and from parents, grandparents, volunteers from the community and cross-age tutors. While the teacher can count on a lot of help, she must take responsibility for assuring that help. Parent orientation to the program is her responsibility, with parent education meetings held at each of the school sites.

Other new roles must be assumed by the teacher in a multiage setting. As the leader of a teaching team, she must interact with both children and adults. She is responsible for calling the children together at some time during the morning in small groups. The needs of the individual child, not the particular grade level, dictate the composition of the group. Usually, the purpose of grouping is to teach a new concept or to reinforce prior learning or skills.

The child's individual activities are considered important. The program tries to build on the individual strengths of each child in an attempt to enhance his self-image so that he does not learn to think of school as a place of frustration and failure.

The teaching teams have developed varied methods of record keeping. Needs are assessed through student/teacher conferences and by informal observation. Report cards are not the usual practice in the program, although parents may request them. Many parents who work in the classroom already have firsthand information of their child's progress; others may request individual conferences with the teaching team. Project Director Hensell notes that the parents who volunteer for the program become its best ambassadors to the community because they know, and approve, what's going on.

The Child's Role

At Benchley, the day begins when the children arrive at school. They are allowed to, and do, enter the classroom as soon as they get to school. They may select any activity or experience during this "free choice" time, which is patterned after the British Infant School idea.

In classes throughout the city, children who are engaged in cross-age tutoring (helping younger children) often show up at 8 a.m. and work with their "students" until their own classes start at 9, according to one teacher. She also is encouraged by the number of students who pursue their tutoring activities at recess or at lunchtime.

Another indication of what the project means to the children is related by Hensell. Before all classes at Benchley became part of the project, he says, children from grades 1-3 would arrive at school early so they could participate in the "free choice" activities going on in the classrooms of the pre-K/K/1 students. The primary teachers took the hint and told the children they could go into their own classrooms for their own free period before school officially started for the day. This led to the elimination of the morning bell and of the "yard duty schedule" for teachers. With no children in the yard before classes started, there was no need for teachers to "patrol" the schoolyard.

As far as activities for children, the multiage project encourages more freedom — in small group and individual activity, with and without adult help, on the floor or out of doors or in learning centers. Some of the project's objectives and how well it met the objectives serve as a gauge of its effect on the children served. The project reports that evaluation results at the end of the second year of operation are supportive. The greatest gains were made by children who had spent at least two years in such grouping, with those who had spent only one year in the project, namely the third graders, showing no gain over control groups.

Following are the objectives and findings at the end of the second year of operation (May 1973):

1. *Objective:* 85 percent of beginning four-year-olds will exhibit readiness for math and reading instruction.

Finding: 86 percent of the four-year-olds showed measured readiness for instruction in math and reading.

2. *Objective:* Students, ages 5-8, in the project classes will exceed control groups in social growth and will demonstrate more positive attitudes toward school.

Finding: All project classes scored higher than control classes on post-tests in social growth and attitude toward school.

3. *Objective:* Students, ages 5-8, in the project classes will show significantly greater growth in math and reading than control groups.

Finding: Five-year-olds exceeded control groups by four months in reading and math; six-year-olds exceeded control groups by four months in reading and nine months in math; seven-year-olds exceeded control groups by one month in reading (not significant) and by eight months in math; eight-year-olds showed no difference in reading and math.

4. *Objective:* Teachers in the project will exceed control group teachers in increasing the degree of individualization of their respective programs.

Finding: Project teachers exceeded control group in degree of individualization.

The instruments used by the project to come up with the findings given above include the Cooperative Primary Tests, Stanford Early School Achievement Test, Analysis of Readiness Skills, Social Growth and Attitude Scale, and the

Individualization Scale (for teachers). The latter two tests were developed by James Retson, evaluator for the project.

Although the project admits that it has not established reliability for the scale used to measure social growth and attitude during the early school years, it says the scale does

give some numerical indication of growth or lack of it by children. In a child's style, "faces" are used by the child to indicate how the child feels about each question.

The questions and the possible answers (the types of faces to be marked by the child) appear on page 12.

Social Growth and Attitude Scale

Social Growth Items

How do you feel about:

1. Playing with friends?
2. Playing games with other boys and girls in your class?
3. Standing up and talking to all the boys and girls in your class?
4. When the other children in your class come up and talk to you on the playground?
5. A new boy or girl in the room?
6. Your teacher telling the whole class about how good your work is?
7. Being asked to play a game with others?
8. Having just a few good friends?
9. Having many friends?
10. Doing some of your school work without your teacher helping you?
11. Asking to work with your teacher?
12. Asking others in your class for help with your work?
13. Helping other children in your group?

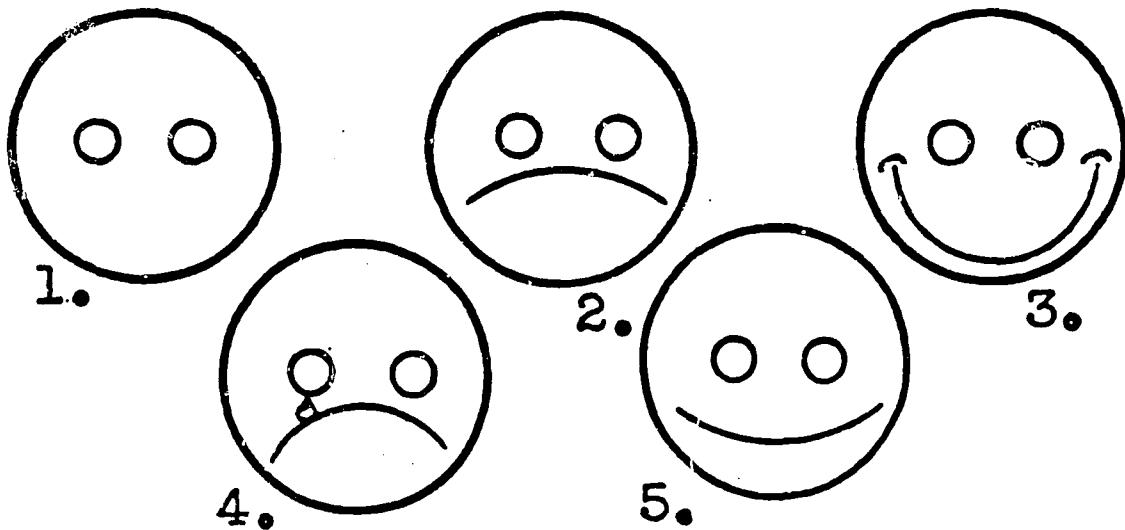
14. Always working all by yourself?

15. Your teacher always saying your work is very good?

Attitude Items

How do you feel about:

16. Coming to school in the morning?
17. Coming to school on Saturday?
18. Sitting next to your teacher?
19. Your school?
20. What your teacher thinks of your work?
21. The teacher asking you to talk?
22. The way your teacher treats you?
23. The things you do at school?
24. Asking your teacher questions about your work?
25. Doing something new in school that you have never done before?
26. Your classroom and all the things in it?



Effects: In California and Elsewhere

One of the project's distinct purposes is to test whether four-year-olds will profit from an early school experience which involves them in a multiage grouping and consequently forces the teacher to individualize instruction for children in the group. If the plan works, Wilson Riles

may more easily persuade the legislature of what he believes to be true — that the inclusion of four-year-olds in public school programs leads to an early recognition of needs and helps to avoid remedial problems in a later school year.

Meanwhile, the project is using many and diverse means to make itself and its ideas known in the state and across the

country. Interest has been high, with more than 1,100 visitors from five states, 60 California cities and four foreign countries visiting the project in 1972. In the following year, the project used the money allocated to it for dissemination to conduct 35 workshops and to make presentations in 17 school districts around the state. In addition, a "traveling seminar" took the project director to 15 other districts. The project has established what it calls "a total immersion" approach, whereby an intern can spend from three to five days studying the project's techniques in its classrooms. For those who can't visit on-site, an account of the model was developed during 1972-73 and is available from Craig Corp. (*The Benchley Report: Multiage Grouping - A Model for Early Childhood Education*; Craig Corp., 921 W. Artesia Blvd., Compton, Calif. 90220; \$9.95).

The three ingredients necessary for a successful program start, says Hensell, are a summer school for the children to be enrolled in the program, a workshop for teachers held in conjunction with summer school, and "someone to be of personal, immediate help to the teachers." The project followed its own advice by enrolling 10 prekindergartners, 10 kindergartners, and 10 first graders in a summer program that allowed for extensive staff training. The prospective teachers were involved with the children in all aspects of the program and, in addition, looked at publishers' wares, and discussed philosophy and teaching strategies. Inservice training throughout the year included sessions with specialists in reading, math, music, art, science and physical education, as well as further exposure to educational philosophies, strategies for individualization and educational materials.

A Note for Potential Adopters

Mrs. Lenox advises that any problems arising in such a program are largely administrative and organizational, but that they can be solved with adequate inservice training for personnel at all levels, sufficient paraprofessional help,

administrative commitment and support, adequate materials and assistance from resource personnel. In San Diego, she adds, these needs were considered in planning the initial application for the Title III grant and the problems have been minimal. Community resistance would probably stem "from the few parents who are not ready to accept the open concept required by individualizing in a multiage grouping," Mrs. Lenox advises.

With the adoption of such a program, a district can also expect parents to be concerned about what happens to the child once he leaves a multiage class, where he has been provided individualized instruction and lots of adult attention. Project staff members answer this question by saying they are working with the administrators and teachers in San Diego schools to make sure that the individualized learning process would be continued in single grade classes or in multiage classes. In this way, they reflect the philosophy of Superintendent Riles, who says children between the ages of 4 and 8 should "master basic skills, be excited by learning and be ready to go on to other things by age 8."

Implications of the Project

One of the objectives of the project is to test the inclusion of four-year-olds in the public schools. The California legislation authorizing this change to take place statewide will not come up again at least for another year. Resistance to its passage the first time round was mainly due to financial reasons, originating at the legislative level, according to Hensell. If the provisions in the legislation remain similar when it is re-proposed, four-year-olds *would not be required* to attend school, but could do so on their parents' request. The Multiage Project is helping to determine if school attendance helps the younger child. In this sense, the project is a testing ground whose results could have widespread impact on early childhood education.

Can Teachers Learn To Individualize Instruction?

Editor's Note:

In the following article, Carma M. Hales gives the thinking behind the U-Sail project (Utah System Approach to Individualized Learning), which received national validation in 1973. Many other projects across the country have adopted in whole or in part U-Sail's philosophy, techniques and materials, including the ACIL project (Arizona Consortium for Individualized Learning) described on pages 16-20. For more information on U-Sail, contact Dr. Hales at the project office, 1421 South 2200 East, Salt Lake City, Utah 84108 (phone: 801/582-1344).

Is it possible to help teachers individualize instruction? Should educators continue to attempt to provide experiences which build teacher competency in meeting individual student needs? The answer to both questions is a qualified yes.

It is possible for a teacher to learn how to work with students in a personalized environment if he accepts the challenge that the individual needs of learners not only should be met but can be met. Once this attitude exists, with appropriate assistance, change in teaching behavior can occur.

The abortive attempts in public education to individualize instruction are well documented. In some instances change in behavior was legislated without guidelines for "how to change" being set. In other cases procedures have involved tinkering with bits and pieces of instruction instead of the total process. The norm too often has been to avoid a systematic way of individualizing instruction.

What Individualization Means

The word individualization suggests many things to many people. The idea that individualization is synonymous with an idealized "always appropriate task for every learner" is realistic. It is not possible for all students at all times to

have an exactly prescribed appropriate task. A more rational view is that individual differences require compromise between the ideal and the possible. In classroom practice, individualization of instruction can be defined as provision of the most nearly appropriate task for each learner, taking into account variables such as the teacher, the specific point in time and the available resources. With this practical position as a working base, a teacher who will try, and who has assistance, can more nearly approximate the ideal. Inservice instruction can provide the vehicle needed.

An effective inservice program provides experiences in implementation of specific installation phases. There is provision for developing competencies in management and instruction. How is this possible? It is done by using sound teaching principles and applying them to the instruction of teachers.

The steps include planning, organizing, installing an environment, employing teaching strategies which are diagnostic, prescriptive and evaluative, and incorporating appropriate learning strategies. When set in motion, the model is continuous. Once begun, a program may be installed one step at a time, using the following procedure:

Planning

First, teachers learn to plan in terms of goals. This phase includes focusing on terminal objectives for learners. The aims of education are explored and the philosophical bases for practice detailed. Such planning brings into conscious review the publics served, the needs of students and the expectations of society.

Coming to an agreement about "why" education is a lifelong encounter — but keeping "for now" purposes in mind — gives a sound foundation for the kinds of activity which students encounter. For example: A terminal objective might include a statement that students should emerge from school as knowing, independent and responsible citizens. Logically, then, schooling should be organized to give learners opportunities to plan, make decisions and complete tasks which help them build toward these goals.

Organizing

When initial planning is done, work is organized. Resources are assembled with diagnostic and prescriptive teaching in mind. The challenge is one of meeting the needs of each individual within the framework of a group setting. Each classroom, each building, each child is unique from every other. Yet, responsibility for the total group is never abandoned.

Organizing resources efficiently is a must. The teacher's responsibility is to create a climate for individualization from whatever is available. Time, space, materials and methodology need careful review in terms of how best to accomplish goals. Each student is accepted and valued as an individual of dignity and worth. Accountability is assumed. Each teacher and each learner are expected to try!

Working with the Environment

Plans are put into action with the establishment of an environment. Teachers are given help as they apply what they learn about management. Use of space is functional; time frames are flexible. Materials are coded and placed for quick and effective retrieval. Grouping and independent learner activities are established. Student responsibility for commitments and record keeping are built into the system. Working with one area of activity at a time, effective management procedures are installed.

Working together with students, the teacher sets goals and assesses progress. The structure is one of "always becoming," with success built upon success. When even partially accomplished, classroom living becomes more student oriented; groupings are diversified.

Multi-use of materials and a variety of activities are evident.

Students know what they are doing and why. They have materials available to them. Group and individual records are kept. Conferences between the teacher and the individual learner are given high priority.

When this kind of environment has been installed, there is both order and structure, but freedom within structure. The mechanics for individualization are in operation and the stage is set for in-depth quality instruction.

Teaching Strategies

With teaching as the next focus, each teacher is given the opportunity to develop depth as a clinician in the classroom who studies both the academic content for instruction and the multi-dimensions of learners' differences. Teachers develop expertise in diagnosis, prescription, and evaluation — which involves more than placing learners in appropriate context. They become aware of such variables as learning style, differences in behavior, diversity of social

background and student's individual interests. The gamut of individual differences is explored. As more is known about each learner, practice is continuously modified. The teacher is taught to cope effectively with those students who require more teacher direction and more structure. He is helped with realistically prescribing tasks. Diagnosis and prescription are framed in terms of realistic goals; students "spread" is not permitted to override what can be managed. Groupings are kept open and students are placed in them on an "ad hoc" basis.

Learning Strategies

As teachers learn to individualize instruction, they place more emphasis on the learner's activities. Students are given opportunities to "learn how to learn." Each learner is given experiences which encourage independence and responsibility. He is placed in situations where he is able to make choices, set goals, assess his own progress. Within this framework, the teacher counsels, assists and teaches while the learner learns. Hopefully, each learner moves closer to becoming a knowing, caring, rational human being.

The Total View

When the cycle is completed, the phases become intertwined and continuous in operation. No teacher or learner ever "arrives," but both students and teachers become increasingly proficient in their ability to assess their growth and set appropriate goals for instruction.

Using the strategies described, individualization of instruction can be installed. Instant change is not guaranteed. In selected schools in Utah, through the Title III model described, U-Sail (the Utah System Approach to Individualized Learning) has proven to be effective. Eighty-five percent of the teachers involved in the Title III project have changed their teaching practices, and academic achievement and affective measurement of student outcomes have shown improvement. Now in its dissemination phase, the model is being utilized in 34 elementary schools. These schools vary widely in terms of kinds of communities served, staffing patterns, building design, and socio-economic base. By fall of 1974 the process will be used in approximately 157 selected schools.

Why does this system work? It works because it is reality based and deals with the instructional system rather than bits and pieces in isolation. It provides an organized inservice program in which teachers can grow professionally. It has built-in feedback, accountability and self-renewal.

It demonstrates that when teachers accept the necessity for individualization of instruction and work toward achieving an individualized program in a systematic way, it can be done.

ACIL: Enabling Teachers To Individualize Instruction

Individualization: Providing the most nearly appropriate task possible for each learner, given a specific teacher and the resources available to him at a specific time.

If that definition of individualization sounds practical and realistic, all well and good. That's what seems to be working, after only a year's experience, for the Arizona Consortium for Individualized Learning (ACIL), a Title III funded project attempting to individualize instruction in a network of school districts across the state.

Admittedly, one year's experience is seldom enough to judge the success of an effort to improve any aspect of education, but in ACIL's case, it provides a good indication of what can be expected to happen. ACIL Director Leon Webb credits much of the project's success to its status as a "foster child" or an adaptation of the much touted U-SAIL project in Salt Lake City, also a Title III project. U-SAIL (Utah System Approach to Individualized Learning) has been operating successfully for the past six years and is now broadly accepted in Utah with 32 of its 40 school districts presently participating. As it did with ACIL, U-SAIL willingly shares what it has learned about individualizing instruction with other interested districts.

Teaching teachers how to establish and manage a classroom environment, which subsequently results in more individualization for the students, is basically what ACIL and U-SAIL are all about. "The key to whether the system will work is simply commitment—the willingness to try"—according to Deane E. Hurd, a Title III education program

specialist with the Arizona Department of Education and one of the people responsible for the introduction of the U-SAIL program to Arizona schools.

Hurd and Webb were highly impressed with U-SAIL when they were named to a four-member team charged with evaluating the project during the 1973 validation of Title III projects. They found that U-SAIL met the basic criteria for validation: It produced credible evidence on its effectiveness, cost and exportability. In addition, the team members became enthused about the possibility of using U-SAIL's techniques to improve educational opportunities in their own state of Arizona. Webb said his earlier exposure to U-SAIL, while spending a year as a Ford Foundation Fellow studying individualized instruction throughout the country, left an impression which the validation visit backed up: "It was the best individualized program I saw—one which was really doing something for kids."

Getting Started

Upon returning to their home territory after validating U-SAIL, Hurd, Webb and Ralph Goitia, an Arizona superintendent who also served on the validation team, started to urge fellow administrators and State Department personnel to go take a look for themselves at what was happening in Utah. Subsequently, a proposal was funded under Title III based on the belief that the needs and abilities of students in Arizona were similar enough to those in Utah that successful implementation in Arizona could be expected. The Arizonans spent a considerable amount of time studying and adapting techniques, aided by U-SAIL Project Director Carma Hales and her staff.

Some modifications of the U-SAIL approach were necessary. For example, the U-SAIL staff conducts the majority of teacher training sessions in its central facility, while ACIL trained staff from the eight initial districts in facilities provided by them. In another modification of U-SAIL's techniques, ACIL chose to work with an entire school, rather than a single classroom, as the basic unit. This meant that in

Information for this article supplied by Leon Webb, Director of ACIL, and by Deane E. Hurd, Title III Education Program Specialist for the Arizona State Department of Education.

each of the 15 schools, faculty members had to be trained simultaneously.

An additional modification of the U-SAIL program was the provision for a full-time, on-site "implementor" for each district, a person who assists classroom teachers and the principal of the school in implementing the program. U-SAIL provides for implementation assistance through assignment of a central staff member on a part-time basis. "We asked for and were assigned an outstanding teacher in each district to act as school implementor," Webb says. The implementor devotes full time to working with both teachers and principal in "doing whatever needs to be done." Some of the implementor's time is spent working with central ACIL staff and U-SAIL staff in providing inservice training to teachers. Implementors take some of the load off the principal's shoulders, in addition to easing the adjustment for teachers, some of whom have to "break" teaching habits which have been established over 30 years in the classroom.

An Executive Board consisting of the superintendents of the eight participating districts, as well as a representative from the non-public schools and from the State Department of Education, was formed to establish policy and direction for ACIL. After securing assurances of cooperation and support from the school board and administrators in participating districts ACIL staff, assisted by U-SAIL staff, began intensive two-day training sessions for principals and teachers in each district (six districts have two schools each; the other two districts have one school).

The school year was already under way when the project was funded, so the project worked with the districts in getting released time for teachers on Fridays, with the balance of the first two training sessions conducted on Saturday. The development work already done by the U-SAIL project provided an inservice model, the needed inservice and curriculum materials, and generally enabled ACIL to install the program much more rapidly than would have otherwise been possible.

How It Works: For Principals, Teachers, Students

In its first year of effort, ACIL wanted to concentrate on using the ACIL process to meet the individual needs in reading and math of youngsters in grades K-6. This meant the 325 participating teachers had to be trained in the process of modifying the learning environment of their classrooms.

Principals receive dual training, once in a session particularly aimed at teaching them skills in becoming the "instructional leader" of the school and again in the teacher training session. Initial inservice experiences deal with helping teachers to understand their role in a child-centered environment. Described as a humane approach to education by Webb, ACIL teaches that each student must be treated as an individual. Yet, each is expected to develop responsible and independent behavior as part of his learning experiences. Teachers are told they should not be doing anything for students that students can do for themselves. In practical terms, this means students in all grades are responsible for handing out paper and pencils, keeping track of supplies, taking care of them and putting them back into their assigned place when they are no longer needed. In a wide departure from traditional practice, each student learns to be responsible for keeping a record of his progress. Teachers also keep a record of each student's progress.

Teachers are taught that planning must undergird their activities, if they are to develop the individual potential of their students. ACIL suggests ways in which the teacher can use what is already available in the way of materials, space and staffing, but to use each resource in a better and more systematic way. ACIL makes use of supplemental reading and mathematics instructional materials developed by U-SAIL. Although these are not required, Webb says they "greatly facilitate installation of the desired process of instruction."



Teachers are taught in the training sessions how they can establish a classroom atmosphere in which each child feels that he is important, that somebody cares. Children are expected to accept themselves and others as worthwhile individuals and to take part in meaningful learning activities.

In one of the outstanding success stories emerging from the project thus far, one inner-city elementary school has experienced approximately a 75 percent reduction in the number of discipline problems. It attributes this turn-around to the change in attitude and the atmosphere which the principal and teachers have developed in the school. Approximately 90 percent of the students in the school come from a low-income housing project. The improvement has been tremendous, Webb notes, ever since teachers have worked toward creating "an accepting and expecting" atmosphere and students have started to take part in "more meaningful" learning activities.

To show that the "process" used by ACIL works in any setting, Webb cites an example of another school in the same district where the students come from middle-class neighborhoods. Though dissimilar in student population, the results are similarly encouraging: Students, teachers and other faculty members cite considerable progress after one year in the ACIL program.

As with students, teachers, schools and districts involved in a truly individualized program seem to take on separate personalities and progress rates, Webb says. He notes, for example, that although all teachers and schools are making progress toward proper implementation of the program, some are making more than others. Overall, considerable modification in the classroom environment and in teacher and student attitude has been noted in participating schools.

Teachers learn in the training sessions how to organize people and things — from something so simple as having materials within easy and convenient access to students to expecting each student to keep a record of his progress. Teachers learn to rearrange space when and where necessary to accommodate grouping and regrouping practices and to set up traffic patterns conducive to effective and efficient classroom management.

Teachers are taught that a major responsibility is to "teach the concept." As they learn more about their students and can determine the strengths and needs of each student, they become more capable of grouping and regrouping students for appropriate learning activities. The project stresses, however, that the teacher's *first* responsibility is to teach, not merely to coordinate program activities.

Flexibility is encouraged in the use of time and materials. Upon determination of student needs and abilities, the teacher schedules various size groups (large group, small group and independent activities). "Flexible grouping for meeting individual student needs holds the key to practical application of ACIL's approach to individualized instruction," says Webb.

Learning centers are not viewed as being solely for faster students or just a place where the faster students can be involved while other students finish assignments. All students make use of learning centers as an integral part of their learning activities. Centers are designed to teach basic concepts through application and encouraging creativity in

an objective-oriented program. The teachers learn to think of the learning centers as resources, almost like having an extra aide in the classroom.

Students and teachers are never out of touch. Formal conferences are scheduled on an individual basis at least once every two weeks to insure an appropriate diagnosis of needs and proper prescription of learning activities. Informal conferences between teacher and student are expected to take place on a constant basis. Students make commitments for a certain, specified amount and type of learning on "commitment sheets." The extent or use of the commitment sheets varies with the different age groups and their ability to make responsible decisions. The types of decisions that students are allowed to make are dependent upon the teacher in that classroom but normally concern independent learning activities or those in which the student works with a small group of students.

Daily drill in short sessions helps to insure mastery of specific concepts or ideas. Since a basic aim of ACIL is to develop competency in reading and mathematics to a student's optimal level, the drills frequently deal with reading and math concepts.

ACIL administrators believe the "process of instruction" taught in the ACIL program will work for teachers in any curriculum area and that teachers will extend the principles they learn to cover other subject areas as soon as they feel at ease with the modified instructional environment. This has taken place in many of the classrooms already.

During the first year, the project's evaluation has been in terms of the degree to which the expected environment has been installed and in terms of change in attitude by principals, teachers and students. ACIL did not try to evaluate student progress in terms of cognitive gains. Webb says specific cognitive data gathering will start during the coming school year. (Data from the U-SAIL project indicate that students in participating schools do as well academically, and in most cases better than similar students in nonparticipating schools.)

Although highly enthusiastic about the first-year results of the ACIL program, both Webb and Hurd concede that "we have not yet arrived," and that it takes a minimum of two to three years to implement the comprehensive process in the systematic manner outlined in the U-SAIL and ACIL programs. Learning activities taking place in ACIL schools attest to present acceptance of the program by principals, teachers and students, they note, adding that educators and parents in the state are also convinced of the soundness of ACIL's approach.

What's Ahead

In the 1974-75 school year, the project will almost triple the number of students included under the approach. Over 26,000 students in 48 schools, up from 9,000 students in the first year, will be affected by ACIL classroom techniques. Webb notes that this figure does not indicate the number that could be included, judging by the number of schools that have asked to be involved. With initial training for an additional 525 teachers to be completed by the beginning of the school year, however, the project is carrying a capacity load. The problem in extending the project to all districts that have asked to be included is in providing adequate staff to properly conduct the inservice training

Conference Time

Need To See You



A POEM ABOUT ME

I am me!
What a wonderful thing
to be
Me!

What a wonderful nose!
I can sniff and smell
so well,

I'm surprise and proud
Of me!

I can see!
I can sneeze
When I please

Cheryl Vaughn

Cheryl Vaughn has prospered in ACIL, as shown by the poem she composed at the end of the school year. Cheryl is a fourth grader at Dunbar School, one of the schools participating in the project.



program. "Our top priority for the 1974-75 and future years is maintaining the quality of the program that was established in 1973-74," Webb says.

The participating schools for 1974-75 appear strongly committed to ACIL, judging by their agreements with the project's Executive Board. One such commitment was that participating districts agree to pay half of the inservice training costs, with the project picking up the balance. The project plans to increase the number of implementors from 8 to 12 by the start of the school year to work with schools in the 20 participating districts. For schools that will be entering their second year of participation in the project, school implementors will be more heavily involved in providing inservice training for staff members. Each implementor will be working with more schools during the upcoming school year with some having responsibility for as many as six schools.

As a logical extension of its project, ACIL has already started to involve the major universities in Arizona in its plans and activities. The ultimate hope is one of greater involvement of university staff working with preservice education. Webb says the project has received an "excellent reception from the deans of the colleges of education

in the three major universities in the state."

ACIL and U-SAIL will continue to coordinate their efforts so that duplication of effort does not occur. For example, ACIL plans to study means of utilizing the ACIL process with special education students, ranging from the handicapped to the gifted within the confines of the normal classroom. ACIL and U-SAIL are also coordinating their efforts in the development of inservice strategies, implementation procedures and curriculum materials in the reading and math areas for use at the junior and senior high school levels.

Using the same philosophy it stresses with teachers and students, the project intends to build a step at a time toward its goal of "meeting the needs of student, staff and administrative populations found in Arizona."

A spokesman for the state department notes that ACIL is a good example of what happens when adoption/adaption reaches beyond district or state borders. "I feel many states should look to other states for already proven practices," says Fred Sugrue, deputy associate superintendent for the Arizona State Department of Education, as well as the state's director of Title III. "We decided to try it and we found it to be tremendous," he added.

ACTIVE: For Handicapped Students And Their Teachers

The nation is becoming more sensitive to the educational needs of the handicapped. Rapidly changing community attitudes about the states' responsibility to provide adequate services to educate the handicapped—as indicated by the great number of states which have passed laws mandating such services in the past few years and the growing number of court cases on the rights of the handicapped to an education—are sure signs of this increased concern.

Charles M. Cooke, Jr.
Deputy Assistant Secretary for
Education Legislation testifying before
the House Select Subcommittee
on Education, March 22, 1974.

As Charles Cooke reported to the House Committee, the states are recognizing the needs of handicapped children—sometimes due to the pressure applied by parents through the courts, often due to new state laws. As Cooke mentioned later in the same speech, personnel working with handicapped children must be provided the training and additional skills they need to work with the increasing numbers of handicapped children who will be leaving special schools and centers and will be joining their peers in regular classrooms.

The problem is—many districts and many teachers are unprepared to help the child deal with his handicap. Fortunately, some districts have concentrated their efforts on training staff to work with children who are mainstreamed

*Information for this article supplied by Thomas M. Vodola,
Project Director.*

into the regular school program. Such has been the case with Project ACTIVE (All Children Totally Involved Exercising) in Oakhurst, N.J., now completing its second year of funding under Title III.

Prior to Project ACTIVE, New Jersey lacked a "teaching model" for providing guidelines for a physical education program for handicapped children. Only one course is generally provided at the undergraduate level to give teachers the skills, knowledge and attitudes necessary for working with the handicapped. Meanwhile, many districts in New Jersey are starting to mainstream children—going beyond the state's basic requirement that all children must be provided an "education commensurate with their needs."

The Oakhurst district already had an established K-12 program for handicapped children when it applied for federal funding. In addition, the district was recognized by the state for its exemplary program, to the extent that, for the past two years, it has served as a demonstration site for educators from around the state.

One of the concepts in use in the project—that of cadre teams—has been adopted by the state for use in the training of art teachers. As developed in Project ACTIVE, cadre team members are selected during an inservice training program. They receive additional training, backed up by the practical experience of conducting a program in their own school district, which enables them to serve as trainers of other teachers and demonstrators of the program.

As a result of the project, a teaching model kit has been developed, revised and used to train teachers from around the state. By the end of 1973-74, the project had enabled more than 150 teachers to receive a 40-hour training program geared to the development of specific teaching competency with the handicapped. Thomas Vodola, director of Project ACTIVE, notes that the training is provided for teachers at no monetary cost to their home districts. However, the superintendent of the district must sign a contrac-

tual agreement stating that (1) some aspect of the project will be implemented in the district and that (2) pre- and post-test data will be fed to Project ACTIVE by the adopting school district.

The end result of the training — as it affects the children involved — can be illustrated by the following story from Livingston School District, one of the New Jersey districts that based its physical education program on Project ACTIVE. In the Livingston district, one youngster confined to a wheelchair had to be pushed to and from her class. With the inception of the new program, the child received 30 minutes of physical therapy weekly and performed a series of prescribed exercises. The impact of the program has been profound: she now walks to and from her classroom four times a day.

Why Individualized Physical Education?

Similar to what is found in many other parts of the school curriculum, students are all too frequently treated as a group in physical education classes, with little or no consideration for their disparate needs. In too many classes, all students are expected to perform the same tasks, regardless of their handicapping condition or else they are excluded from the class, if their condition is too severe.

Vodola maintains that all children can benefit from physical activity if a program is designed commensurate with their needs. While the so-called normal child can be assigned to a physical education program with unrestricted activity, the child with a handicapping condition should be assigned to an enrichment program that focuses on the strengthening of weaknesses. Enrichment and individualization are combined in Project ACTIVE in a program referred to locally as D & A (Developmental and Adapted Physical Education).

Sometimes the physically handicapped child also can be mainstreamed into the district's regular, i.e., unrestricted, physical education class. However, this does not happen if the family or school physician recommends against such

activity or if the physical educator decides that the child will not benefit educationally from the class.

How Students Are Chosen for D & A

Based on a teacher-chosen pretest, handicapped students are referred to the D & A program. The test varies according to the indicated difficulty. If, for example, the child seems inordinately clumsy, he would be administered the Motor Ability Screening Test. On the other hand, if a child is referred by a physician for an abnormality in posture, the teacher would administer the New York Posture Screening Test. The physician writes the "posture prescription." An individual child who shows low physical fitness, a nutritional deficiency, a learning disability, a breathing problem, a communication disorder or a motor disability or limitation would be pretested by the teacher. The information would enable the teacher to assess the relative strengths and weaknesses of the child.

Moving from Diagnosis to Performance

The success of individualized instruction in physical education is no easy matter. It depends mainly on how well the teacher uses the assessment techniques, according to Vodola. In other words, the testing will be of little value if it is concerned only with what the child does (the product), rather than how and how well he performs the assigned tasks (the process).

The teacher must be capable of assuming the multifaceted role of diagnostician, prescriber, assister, guider and resource person if the child is to receive maximum benefit and truly individualized instruction. The teacher must not only understand how to assess the child's performance in a formative manner, i.e., throughout the learning unit, but he must be able to assess the summative behavior as evidenced by the outcomes at the end of the program.

Project ACTIVE provides instruments for assessing students' performance both formatively and summatively. The child's handicapping condition receives utmost consideration, and the teaching/learning process can be modified as required, through criterion-referenced objectives. One of the test items for children with learning disabilities, for example, states that "the student demonstrates the ability to integrate the following perceptual-motor responses: auditory-motor, visuo-motor and auditory-visuo-motor." The teacher must constantly observe the child to determine the compatibility between what the child can be expected to learn from the instruction received and what he actually achieves.

In addition to the constant surveillance by teachers, standardized tests such as the Motor Ability and Physical Fitness Tests are administered at the beginning, mid-year and end of the year. The test results help the project staff to determine individual differences, to select those students who should be released from the program or be rescheduled for the following year, to revise teaching methods or curriculum, and to prepare administrative reports.

Prescription: A Natural Partner of Testing and Assessment

Teachers are trained in Project ACTIVE to constantly observe the child to obtain both objective and subjective data.



Assessing a student's postural orientation.



Prescription based on task analysis: arm strengthening.

This information is supplemented by a teacher-written profile of each individual child, with the final result being a graphic illustration of the child's strengths and weaknesses.

The project emphasizes the importance of the inter-relationship between the teacher's assessment of the child's needs and the effectiveness of the prescription. An experience of one teacher involved in a training session illustrates the case. The teacher felt she could not work with a child with a spina bifida (paralysis from the waist down) because the child could not perform any of the standardized tests or designated tasks. The teacher already had a sound understanding of the principles of movement and knew how to structure tasks from the simple to the complex. She needed to be trained, however, to observe the child's behavior in a variety of situations: while sitting in a wheelchair, getting onto her crutches and locomoting with the crutches. Following is the teacher's recorded observation and her suggested prescription to overcome the child's physical difficulties:

Observation

Difficulty propelling and getting in and out of wheelchair.

Inability to maintain balance without some form of support.

Inability to fall to the floor safely and to get back upon crutches unaided.

Utilization of the "drag-to" gait of crutch-walking.

Prescription

Exercises to strengthen hands, wrists, arms and shoulders. Propelling chair/getting in and out of wheelchair.

Balancing in sitting/standing position.

Practice discarding crutches and breaking fall with hands and forearms. Getting up from a prone/supine position unaided.

Strengthening exercises, practicing "piking" the body, and developing proficiency in the "swing-through" gait.

Evaluation of the Student's Progress

Individual student evaluations take place at mid-year and at the end of the school year, through standardized tests that relate to student's handicap. His achievement and improvement are determined through an analysis of the pretest and post-test, and in terms of the criterion-referenced objectives. It is then up to the student's teacher and other project staff to make one of three decisions: (1) to release the student from the program and schedule him solely in the unrestricted activity program; (2) to allow the student to continue in the program for an additional 18-week period, following the same prescription; (3) to allow the student to continue, but under a modified prescription.

In any decision concerning the student, teachers also consider the student's body structure and his personal attitude. If the student has a medical problem, the school physician determines future programming.

Keeping Up with Current Activities

As a project that has aroused much interest in the state of New Jersey, Project ACTIVE now affects more than 3,000

How To Personalize Instruction

Individualized instruction — even in the area of physical education — can only work if teachers simultaneously "personalize" instruction. How do you do this? Project ACTIVE suggests the following:

1. Refer to each student on a first-name basis.
2. Structure the sequence of planned activities so that students meet success most of the time.
3. Provide immediate and positive reinforcement for any measure of success.
4. Devote half of each class period to activities or games that focus on each child's strengths.

children in 30 school districts. The May 1974 issue of the project's newsletter noted that 25 workshops had been presented throughout the state during the 1973-74 school year. The project was also selected as one of four Title III projects from the state to be displayed at the 1974 convention of the Council for Exceptional Children. Vodola notes that 5,000 pieces of literature on the teacher training component of the project were distributed at the convention.

New activities scheduled for the 1974-75 school year include "branching out" with the workshop program. Vodola said this may mean that the number of cadre teams conducting workshops and giving demonstrations around the state may need to be expanded. He said he has received

many requests for mini-workshops that would concentrate on how to work with a child with a particular disability. He also foresees a need to do more studies on the results of the project as it affects the child's ability. The impact of the project on the children's motor activities was determined to be significant in two studies already conducted by the project. During the coming year, Vodola hopes to be able to expand the evaluation to include the impact on the child's physical fitness level and self-concept.

Vodola notes, with enthusiasm, that the training sessions have been drawing large crowds of teachers and administrators — all of whom profit by finding out that they can help handicapped children, if they are properly trained to do the job.

'Good' Math Comes to Arnold

"Kids in small schools need just as much help as those in bigger schools."

In fact, the problems of kids in smaller schools sometimes receive more attention. That has been the case in the little Nebraska village of Arnold ("population 740," according to the highway sign), where the four-year high school lies within sight of the big sandhills cattle ranches to the north and the great grain farms to the south. The 135 students are transported by bus from up to 15 miles away, and it's an unusual year when the students don't miss school due to the fall cattle round-ups, prairie blizzards or the spring field work.

In this sense, the students learn a lot from the land and their particular environment.

And, thanks to the insight of two of their teachers, they are now learning a lot of math from a well conceived adaptation of a national phenomenon — television.

The two teachers, Russ Thompson and Albert Fuller, became concerned when a senior high school student, of "average" ability, couldn't check the invoice for his senior pictures.

Prompted by the demonstration of a packaged physics instructional program, Fuller wondered aloud if a similar idea in packaging could be applied to math. With the encouragement of the district's late superintendent, Alvin Story, the two teachers applied for \$5,000 in planning funds from Title III to develop their idea, believing that the small school system provided a natural place for a new teaching system to develop and grow. The funds were granted during fiscal 1971, followed by two years of operational funds for the program, now known as Videotape Package-Mathematics (VTPM).

The goal of the project is twofold: to improve student achievement and their attitude toward mathematics. The methods used are individualized, depending on the interaction of teacher, student and machine.

Information for this article supplied by Russ Thompson,
Act Director.

How VTPM Works

Fuller and Thompson believe that students need individualized instruction that takes into account what the student already knows and the pace at which he learns. In addition, they believe that a student must know what is expected of him and must be provided help, through well devised instructional materials, and the ever-present guiding hand of a teacher, in order to be able to move through a sequential mathematics program.

The teachers worked for two summers developing objectives for units of instruction in Basic Math I and II and Algebra I and II and packages of materials that could enable students to meet preset objectives. The basic instructional materials are 10-minute videotapes.

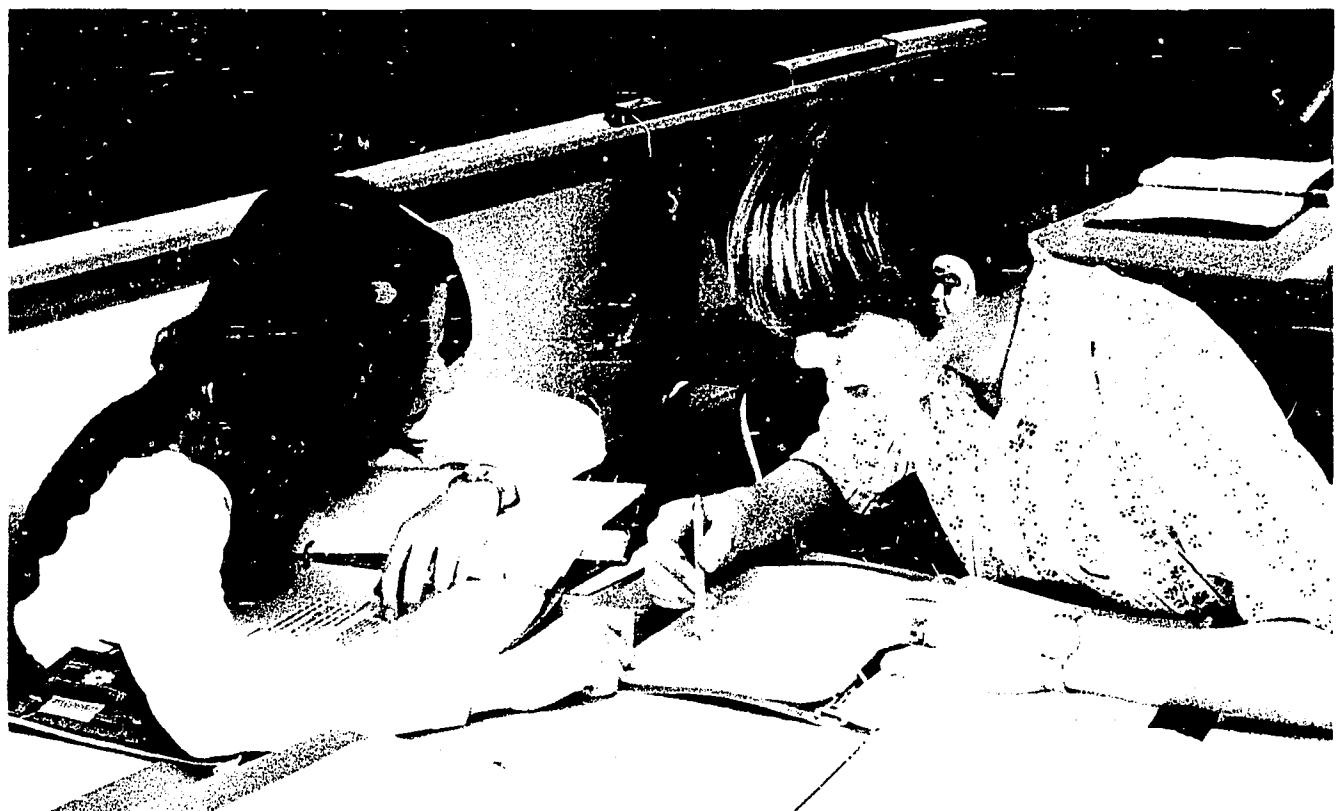
A student receives credit for knowledge which he already possesses, starting with the most basic of arithmetic concepts. If he passes the pretest on addition and subtraction of whole numbers, he receives one credit hour and proceeds to the next package. The two teachers maintain that the immediate granting of credit for what the student already knows or for satisfactory completion of one of the packages is strong motivation for the slower students.

If a grade of 80 percent is achieved on the pretest accompanying each package, the student can move on to a more advanced unit. If the student does not receive the minimum grade, he starts work on the package. First he must read and comprehend what the package requires of him, in other words, its objectives. He receives direction from the objectives, not instruction. He is directed to check out an instructional package and textbook. Assumedly, this is his level of ability and the place where he needs review and instruction. He is assured, then, that he is working at his own particular level — not below it, not above it.

The student checks out the 10-minute videotapes, which are keyed to the main objectives and subobjectives of each unit of work. He works with the videotape in one of the 10 learning stations, located within the mathematics center. The equipment in the learning station is easy to operate and students can stop the tape, back it up and replay it as many times as needed.

Two other pluses for students are the constant presence of Thompson to answer questions and maintain a personal student-teacher relationship and the presence of students at all levels of instruction, which encourages peer teaching.

The two teachers criticize "traditional TV instruction"



because it lacks the personal attention of a teacher. The students back up this view and, in fact, would be somewhat "lost" without Thompson, who spends up to half of each class period answering questions. He says all types of students need help: the slower learning students need reinforcement and additional explanation; the brighter stu-

dents need guidance because they usually are working on the more difficult units.

The tapes are viewed by two professional evaluators, as well as by the math teachers and students. If a tape is ineffective in teaching the concepts it was designed to teach, it is erased and revised. In fact, the teachers set aside

one day each month solely for the purpose of making needed revision in the instructional videotapes.

Involvement for Parents; Flexibility for Students

In the same manner that the teachers want to know how the students are doing and to make sure that the system works, they have devised a means of giving parents a like option. Each summer, individual conferences are set up with the students and their parents for the purpose of writing a "mathematics contract." Deemed a reasonable compromise between the student's abilities and ambitions and the parents' desires for him, the contract stipulates the minimum completion schedule that the student must maintain. As the school year progresses, the contract is checked against the student's achievement once a week, and the parents are notified by telephone if the youngster falls behind schedule.

The student profits if he can get ahead of his agreed-upon schedule. For each package that he is ahead of schedule, he is awarded one free day, which can be used then or accumulated. On his "free day" he does not have to

attend class and can opt instead to pursue an interest in the library, to read or to catch up on another subject.

More flexibility is provided by the number of options available among course offerings, including 23 credit hours of basic math and 25 credit hours of algebra. During the summer of 1974, Thompson and Fuller plan to produce the videotapes for units in trigonometry and geometry, with the following summer devoted to the production of an analysis course, which will complete the math sequence.

Breakthroughs for Teaching and Learning

As a project that "cashes in on the student's TV viewing habits," the Videotape Mathematics Program has caused a real breakthrough in the students' attitude toward math, say the two math teachers. By this, they mean that the students are more positive toward the subject than they have been in the past.

The aim of Thompson and Fuller at present is to complete the math system they envision for their own small school. After that, they hope to be able to share what they have learned about the effective teaching of math with other districts that do know their students need help, but don't know what to do about it.

A Sample of VTPM

Math teachers Thompson and Fuller have compiled a series of packages to aid the student in solving problems in algebra, plane geometry, etc. The following example is excerpted from the package "Working with Polynomials."

In order to solve more complex problems you must now learn how to perform the operations of addition, subtraction, multiplication and division with polynomials. A polynomial is the indicated sum of monomials. A monomial is a term which is either a numeral, a variable or the indicated product of a numeral and one or more variables. Thus $x + 2$, and $3x + 5ab^2$ are polynomials.

Package Goal: Given two polynomials, you should be able to perform any of the basic operations with them.

Package Objectives:

1. Given two polynomials, write their sum in simplest form, and check the sum by substitution.
2. Given an equation in which symbols of grouping are used to indicate addition or subtraction, solve it.
3. Given two monomials, or a monomial to be used as a factor more than once, write their product.

4. Given a polynomial and a monomial, write their product, and solve related applied problems.
5. Given two polynomials, write their product and solve related applied problems.
6. Given a polynomial, raise it to a given power and solve related applied problems.
7. Given a problem in dividing monomials, write the quotient.
8. Given an expression in which exponents of zero, negative exponents or both occur, write it in simplest form.
9. Given a polynomial, divide it by a given monomial.
10. Given a polynomial, divide it by a given polynomial.

Activities:

1. Do the even numbered oral exercises 2-20 Page 207. (Answers are in the Teacher's Edition) (Objective 5)
2. Do the even numbered oral exercises 22-30 Page 207. (Answers are in the Teacher's Edition) (Objective 4)
3. Write some of the odd numbered part A written exercises Page 208. (Answers are in the back of your text book)
4. If you like challenges and puzzles you will want to try some of the part B exercises, Pages 208, 209.

Getting Ready for High School Algebra

If teachers are to be trained to effectively individualize instruction for students, individualized learning experiences must be provided (1) for them, (2) for their students. That's the twofold approach used by three Pre-Algebra Development Centers included as part of a Title III project, and located on the Southside of Chicago. The project also holds that teachers must see a workable model of individualization of instruction in action — one that takes into consideration both the learner and the teacher.

The Centers, entering their fourth year of operation, prepare eighth-grade students for entrance into high school algebra classes and, at the same time, provide teachers with a living, learning laboratory. While participating in an individualized training program, the teachers learn the value of an environment designed to meet the needs of students on a one-to-one basis.

The LCD Technique

The Pre-Algebra Project, under the leadership of Mrs. Dorothy Strong, developed an LCD model (Laboratory, Classroom, Diagnosis) which includes four techniques: an individualized mathematics laboratory, intensive student-teacher interaction in regular classroom situations, individually prescribed diagnosis and individually prescribed remediation, and an individualized program.

Mrs. Strong says the LCD technique takes into consideration the following factors regarding behavior patterns of individuals: Learning takes place for many students when they experience mathematics in real life situations such as those available in the mathematics laboratory. Yet, the laboratory does not meet the needs of all students. Learning takes place for many students in a classroom setting with a teacher and a group of students working together. Yet the traditional classroom does not meet the needs of every student. Learning takes place for many students in an individualized setting where each student works on diagnosed mathematics deficiencies at his own rate. Yet, individualization does not meet the needs of all students. LCD's multiple technique allows students to find the learning situation that matches their established learning patterns, and it matches the learner with an appropriate learning environment.

Each phase of the technique is described below:

Laboratory: A 'Real World' Experience

The mathematics laboratory in each of the three centers has provided underachieving students with eight weeks of intensive math and reading, mainly in the basics they need as a foundation for high school algebra. Teachers in the Centers are drawn from both elementary and secondary schools. The materials and equipment are deliberately chosen to stimulate the students' interest and to motivate



Cuisenaire rods serve as eye openers to understanding measurements.



Student writers develop materials for use in Centers.

Information for this article supplied by Dorothy S. Strong,
Project Director.

them to conquer their math problems. Hand computers aid in understanding decimals.

Students become excited, Mrs. Strong says, when they learn that they are master of the machine — that although the machine has the capability of counting forward and backward and has a built-in place value, it depends on the student as the "brains" of the duo and the one who must give directions. As the student improves his ability to master the machine, he gains a lasting understanding of the underlying principles of mathematics.

Other materials and equipment, in addition to the hand computers, are selected on the basis of their value in concept development, versatility, creativity and interest level. Included are such items as cuisenaire rods, geo boards, Dienes blocks, place value models, peg boards, maps, map measures, calculating instruments, measuring instruments, games, puzzles, projectors and other alternative learning aids.



Teachers give help when needed.



Fractions or algebra are easier to understand with Alge Blocks.

Students get the idea that the materials are "theirs" due to an atmosphere of sharing, in contrast to the locked closet system that the students know only too well. This ownership concept has been a tremendous factor in discouraging theft, according to Mrs. Strong, in addition to producing changes in students' attitudes.

The teacher assumes a different role in the laboratory. She relinquishes her identity as an authoritarian or spoon-feeder of facts, becoming instead a co-participant with both teacher trainees and students in the learning process. Working in small groups, students and teachers ask questions that may or may not be answerable in the

framework of a given activity. A successful laboratory experience is expected to leave the student anxious to learn more mathematics than what was defined in the original objective. Students begin to ask such questions as why? What would happen? Why won't this work? As students develop the art of solving problems of varying degrees of complexity, independent mathematicians emerge.

The Classroom: The Traditional Phase

The classroom phase, as the second component of the Pre-Algebra LCD technique, comes closer to a traditional educational environment than any other phase. Guided instruction is the focal point, and the purpose is to encourage students and teachers to initiate, extend and evaluate the study of a given concept.

The classroom phase, because of the familiarity and security it offers to students and teachers, is considered important. An interesting metamorphosis takes place, however, in the pre-Algebra classrooms. Instead of a teacher-centered atmosphere, the concentration is on the student. The instructional techniques follow closely those used in the laboratory, with the added elements of diagnosis of the student's strengths and weaknesses followed by remedial instruction.

Diagnosis and Remediation

The project's philosophy that students are different and should be treated as such is reflected in the diagnostic and remediation component of the program. A group-administered survey test is supplemented by individually prescribed diagnostic tests, which are designed to lead students to self-help materials and practice activities.

Students are encouraged to be responsible and to take credit for their own learning, as a means of building their self-image. One way this is done is by making them the keeper of their own progress records.

Another part of the LCD technique allows for individualized instruction in a reading program. According to Mrs. Strong, such instruction is necessary because students with low achievement scores in the problem-solving segments of mathematics tests also score low in reading tests. Each student spends one-fourth of each day receiving reading instruction from a trained reading teacher.

Teacher Training Program

Once the LCD technique was developed and tested, other teachers were trained in the summer Pre-Algebra program by allowing them to observe an LCD teacher at work with a lab class. The lab classes are supplemented by group inservice sessions conducted by the project director, teacher training coordinator and classroom teachers. Daily group planning allows the teacher trainees to evaluate their progress and to analyze the program, with open discussion of the program's strengths and weaknesses.

The trainees learn to write and revise laboratory activities, which are used and evaluated immediately in the daily teaching sessions. The project director views this exercise as an important measure of the amount of professional growth attained by the teacher trainees. Hopefully,

Mrs. Strong says, teachers will think of themselves as participants in the students' learning experiences and will be able to initiate modified versions of the program when they return to their regular schools. In addition to learning how the LCD technique works and the materials and methods used in the lab, the trainees are taught how to diagnose and remedy math deficiencies as well as to use incentives to interest underachievers in education. Finally, trainees are taught how to coordinate the elements of a math program.

A multiplier effect occurs when teachers assume the responsibility for training other teachers in their district. Some return to the laboratory during the summer, this time as the teacher instead of the learner.

The program has been used to provide practical experiences for students at Chicago State University and the University of Chicago. An entire "methods class" spent two weeks at one of the centers, working as understudies to the Pre-Algebra teachers. Some of the students even volunteered their services beyond the required two weeks, attesting to the value of an on-the-spot teaching experience.

Another example of the spin-off value of the program has been the identification and use of a team of students who work with a Pre-Algebra teacher in writing and revising activity sheets for use in the program. The team includes students who were previously served by the program, regular math students and student artists. The materials produced by the teams are a big plus for the program, according to the project director, because they demonstrate "an element of youthfulness rarely found in published text materials."

Replication

School systems wishing to adopt the program would need to provide for the training of a core of LCD teachers who could assume teaching responsibilities in a Pre-Algebra center. They could become the beginning of the multiplier factor in teacher training.

Equipment, mathematics laboratory materials, text materials and supplies include many things that are presently available in schools, thus reducing the cost of first-year operation. Second-year cost would be less since many materials purchased are non-consumable.

Following is the project's estimate for beginning one center to serve 80 children and train 12 teachers:

4 math teachers for 8 weeks	\$ 9,600.00
1 reading teacher for 8 weeks	2,400.00
4 mathematics replacement teachers for 7 weeks	8,400.00
1 head teacher	2,400.00
Equipment	2,400.00
Math lab materials and other related materials	2,000.00
Supplies	1,000.00
	<hr/>
	\$28,200.00

Results and Recognition

The Pre-Algebra Project emerged as one of the 107 Title III projects identified in the 1973 validation effort, based on evidence of effectiveness, cost and exportability. In addition, the project contracted with Jack Kavanagh and Max Bailey, assistant professors at Loyola University of Chicago, to evaluate the project, based on on-site visitation and observation, statistical analysis of collected data, and pre-

What Makes for Success?

The success of the program can be attributed to the following factors, according to the project staff:

- The program addresses itself to real identified needs of underachievers.
- Six years of testing the model has led to a high level of confidence in the program.
- The learn-by-doing philosophy of the teacher training model gives teachers the necessary confidence
- The time between elementary and high school is an ideal time since this is a new beginning for students.
- Transfer to a regular algebra class provides an immediate, visible reward for success.
- The program's concepts have been carefully analyzed to determine their worth as builders of sound mathematical understanding.
- A supportive reading program is built into the program.
- The LCD technique is designed to accommodate diversified learning patterns.
- Faculty, students and parents provide ongoing evaluation.

test and post-test data. Based on the on-site visits, the two professors concluded:

- New laboratory materials as well as the manipulatives were being used in the classroom.
- The laboratory materials were being used to diagnose particular learning disabilities and to aid in remedial instruction.
- Students were diagnosing their own mathematical ability, with the help of the Computational Skills Development Kit.

Test scores for 1973 produced the following results. Students were pre- and post-tested on different forms of the Stanford Mathematics Achievement Test. The chart below shows average years' growth in computation, concept and problem solving in three centers.

	Center A	Center B	Center C
Computation	3.04 years	2.75 years	2.22 years
Concept	1.90 years	1.85 years	1.40 years
Problem Solving	.98 years	1.62 years	.85 years

As far as the teachers are concerned, the two professors concluded that the program seems to influence their individual teaching styles. Based on a representative sample of teachers who took part in the program, 74 percent were using the LCD technique for remedial instruction; 92 percent rated the program as one with "considerable value"; 43 percent were using mathematical activities to improve students' remedial reading ability; and 87 percent said the program was currently in use in their school.

Where Can Students Get the Answers?

Who am I?

What do I stand for?

Where am I going?

These questions occur to different students at different ages and in different situations. They require self-understanding, a clarification of values and the setting of goals by each student if they are to be answered satisfactorily. One student may feel a great need to resolve such questions early in life. Another may face the questions when an incident leaves him in a state of quandary with peers advising one way and parents, if consulted, sometimes giving a different view.

The Turner School District in Kansas City, Kan., has been attempting to help students find the answers to such questions as a means of understanding themselves and building their self-image. With the help of a Title III-funded project, Individualized Instruction in Family Living, an advisory group of community members and educators started to look beyond what they consider the *symptoms* of social problems for students (drug abuse, social crimes, sexual behavior and parental problems) to get at the causes (low self-concept, little or no respect for others or for society, lack of communication, unsuitable or outdated school curriculum, lack of maturity, and unsureness or vacillation in attitudes or morals).

Members of the initial advisory group included parents, ministers, a doctor and professional educators. After receiving approval from the school administration, the advisory group involved the broader community in order to allow for expression of diverse opinions and values.

The group made two important decisions: to advocate a comprehensive educational program in family living as part of a revised K-12 curriculum and to make sure that the revised curriculum allowed for an individualized component. Their decision tied in with the "State Educational Evaluation of Kansas" conducted in 1970 by Kansas University. That study determined that improvement of students' self-image was the most pressing educational need in the state.

The advisory group assisted the project in the selection of educators representing different disciplines at the elementary and secondary levels who were to begin work on the curriculum revision. The teachers were instructed to follow these general guidelines:

- The revised curriculum materials were to aim at improving students' self-image and understanding, and to help them clarify values and learn how to set goals.
- The existing curriculum was to be thoroughly examined, with all units of study subject to discard, reworking or revision as needed.
- The new curriculum was to include both units that could be taught on a group basis and those that could be provided to the individual student.

The Family Living Curriculum

Materials to be included in the Family Living Curriculum had to be "timely and appropriate to questions that typically arise for students at a given age or for a certain stage of development." Teachers, parents, students, religious leaders, physicians, coaches, and school nurses and counselors were surveyed to help determine the important questions of elementary and secondary students. The early involvement of these people—who would later implement the program—was an important factor in its success, according to Steve McClure, project director.

The selection of materials was all important, in the view of the teachers who worked on the project. Rather than presenting students with a "facts only" treatment, the teachers sought to present "an understanding and sympa-

Information for this article supplied by Steve McClure, Project Director.

thetic treatment of the early and often naive awakening of a student's awareness and curiosity about life." Some of the material should be presented to the student on an individual basis, they thought, and should take into account the student's level of readiness for detail and depth of understanding, probable misconceptions, and feelings and fears.

Materials selected and developed by the teachers are used on two levels. Many have been worked into the curriculum; others form the basis for 106 "unipacs." The topics covered in the unipacs range from "Honesty and Lying" (primary level), "Human Reproduction and Birth" (elementary/junior high), to "Living with Your Parents and Liking It" (senior/junior high).

The unipacs are available to the district's 5,000 students through each school library. Secondary students may check out any unipac they wish, but elementary students are somewhat restricted. If, for example, an elementary student wants to borrow the unipac on "Childbirth," which is designated for junior and senior high students, the librarian asks the student if he is willing to discuss the topic with his parents. The librarian also calls the parents and asks permission to send the materials home so that the parents can go over them with the youngster. Another option used by some parents is to request that a classroom teacher review the material, on an individual basis, with the youngster.

The unipacs present a unique answer to a school that desires to deal with "touchy" problems. Previously, group presentation of such materials, particularly those concerned with any aspect of sex education, caused an uproar in some districts across the country. McClure says the materials provided in the unipacs overcome many of the earlier objections because they take into account the child's age and level of sophistication and they were compiled after a three year search of the best available information.

In addition to dealing with sensitive topics, the unipacs cover personality development; relationships with friends, teachers and parents; various aspects of health and safety; household chores, job training and careers; family relationships; and setting personal goals. When appropriate, classroom teachers work the unipacs into the classroom

schedule or use them to answer the questions of individual students.

McClure says the project is supported strongly by the school district, its teachers and the community in general. Students who have used the unipacs on an individual basis generally have evaluated them as very useful and helpful, he reports. Their suggestions for topics were followed up in most cases, resulting in some recently completed additions to the unipac collection.

How the Unipacs Work

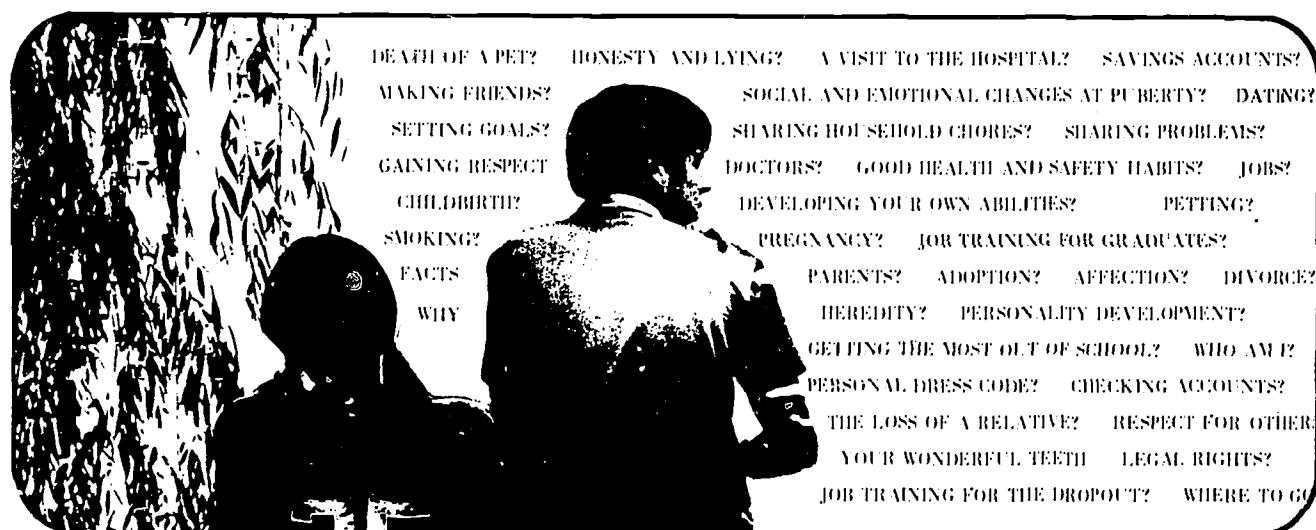
Each unipac allows for self-paced learning at the time the student needs it. Included are cassettes, visuals and programmed instructional materials, along with a guidebook. The pretest contained in the unipac measures readiness for the material and its appropriateness for the student. It also establishes a baseline to measure subsequent learning. The post-test measures the learner's progress.

Thus far, the unipacs have been most widely used by social agencies outside the school, according to McClure. He notes, however, that the project plans to spend its remaining money in making the materials more well known through parents and other community groups.

Area churches have been recruited to work with both adolescents and their parents. The project has cooperated with the churches in presenting sexuality workshops, which make use of the unipac materials. In addition, the project has paid for the enrollment of area ministers in "Parent Effectiveness Training," a nationally recognized program. The ministers then return to their churches and become teachers of the course for church members. This assures that the parents will be ready and know how to help when their children go to them with their questions.

Spinoff for Teachers

Teachers have been involved and supportive of the project since its inception. Even as the curriculum revision proceeded, the district sponsored programs and seminars for teachers and other school staff in the problems, concerns and needs of young people. The emphasis was always on the development of more effective teaching methods.



The idea caught on strongly with the teachers, and in one inservice session alone, 70 percent of the district's teachers enrolled.

A graduate level course in teacher attitude and affective education attracted 125 of the 240 certified personnel. With this amount of interest expressed by the teaching staff, the project staff took a wise step. It worked with a nearby college, Kansas State Teachers College at Emporia, in developing a competency based graduate program, which is field based, uses video tapes and allows for minicourse electives. According to McClure, 25 degree candidates were enrolled in 1973-74, with 45 additional applicants for

the coming year. McClure attributes the amount of interest in the degree program to the teacher's new attitudes. "As they started to work in the affective areas, they found they needed new skills to go along with their new attitudes," he says.

Districts that are interested in finding out more about the project or in obtaining a list of the unipacs or classroom curriculum may write to Steve McClure (Turner Unified School District No. 202, 1800 S. 55th St., Kansas City, Kan. 66106). In addition, the materials are available in either microfiche or hardcover from Xerox University Microfilm (300 N. Zeeb Road, Ann Arbor, Mich. 48106).

Sample Unipac for Intermediate Elementary/Junior High

Aim of this Unipac:

To help a child understand the feelings and problems he or she may have when a divorce occurs in his or her family so he or she will be better able to cope with these feelings or problems.

Objective

You will be able to discuss your feelings about divorce.

Pretest

Purpose: This test will help you and your parent(s) or teacher to determine if you would benefit from this unipac or if you already know the information.

Directions: Go to your parent(s) or teacher. Have this person ask you the four (4) questions listed in the Pre-Test in the Parent-Guardian-Teacher Section of this unipac.

Questions:

1. Who is to blame for a divorce?
2. Why do all of the people in the family feel afraid in a divorce?
3. Is it all right to live with your mother and still love your father?
4. How can you help your parents be happier in their new lives?

Part to be Learned: Understanding your feelings about divorce.

Instructions: Do activities number 1 and 3. Then, select any of the other learning activities which will help you to pass the self-test for this lesson. If you can answer 3 questions correctly go on to the next lesson. If not, review some activities in this lesson.

Lesson Activities:

1. Discuss with your parent(s) or teacher the unhappy feelings you had before and during the divorce; and how you feel about these things now.
2. Write a letter in your own words (and of any length) telling your mother or father why you are happy that he or she is your parent and then give the letter to that person. Ask your teacher for help if you need it.
3. Read pages 34-37 and 57-76 in *Boys and Girls Book About Divorce* by Gardner (Science House, Inc.), and included with this unipac.
4. Using any art method you would like, make a picture of yourself and either your mother or father doing the thing that makes you happiest.
5. Tell your parent or teacher the thing that troubles you most in your feelings for your mother or father. Then, discuss some ways you could change these feelings or at least understand them better.

Self-Test for Lesson 1

Please answer YES or NO to the following questions.

1. Is it wrong to be afraid of the future when parents divorce?
2. Do parents sometimes feel afraid of the future too?
3. Is it uncommon to feel very alone during a divorce even though there are people around who are your friends?
4. Are there times when parents have very hard choices to make and they really don't want to?
5. Can you help your parents when they have unhappy feelings?

IGE and Title III: Facilitating Change In Rural Schools

For two years, a state college and an educational service center in Minnesota tried to help local schools find ways of improving education. Working in unison, they offered more than 50 seminars and workshops in individualizing instruction, humanizing education, continuous progress and educational innovation. Some of the ideas emerging from the seminars were implemented in local schools. But the total result was disappointing due to a number of reasons: the teachers and administrators did not know how to integrate the programs into their daily operations; many of the programs lapsed after a year or two; the outlook for educational improvement seemed to be losing its luster.

The two agencies, Southwest Minnesota State College and the Southwest and West Central Educational Service Area, decided after the two years of effort to seek change through another route. Thirteen member districts of the service center indicated they wanted to be involved in the project. All but one of them were rural and sparsely settled, with long distances between them. All indicated they wanted to provide more individualized and humanized programs to their students. They feared, however, that they did not have adequate personnel, funds or resources to approach such programs in their schools.

At this point, a Title III project was initiated as the means whereby the schools could start to make the kinds of changes they envisioned as necessary. Entitled "Individualizing and Humanizing School Programs," the project explored many programs and approaches with the districts before settling on Individually Guided Education (IGE) as the one most appropriate to the needs of the districts, according to Project Director Daniel Loritz. IGE is a system of individualization used by 1,500 to 2,000 schools in approximately 37 states.

The project became an intermediate district of sorts, charged with serving as a link between a newly established

league of 14 IGE schools and the Institute for the Development of Educational Activities (I/D/E/A), one of the developers of IGE. Such leagues have been set up by other cooperating districts, aided by Title III funds, but prior to the project's initiative in facilitating a league, no IGE schools had been started in this part of Minnesota.

What IGE Offers the Districts

Loritz says the schools favored the IGE system over others they had reviewed because it offered them the following features:

- A well defined organizational structure. Education decisions are made at various levels (e.g., schoolwide, districtwide, systemwide), thus increasing the opportunities for staff, students and parents to have a part in the instructional plan.
- Clearly stated objectives that provide continuing assessment of each student's progress and learning styles.
- A planned program of home and community involvement.
- The league concept, which provides an alliance of schools and support agencies offering consultant help.

IGE concentrates on providing inservice training for teachers and administrators and improved instruction and organization. Each IGE school is encouraged to use whatever curriculum materials it feels are most effective in meeting the individual needs of its pupils. The project helped the schools in the identification and development of suitable materials during its first year of operation. The materials were made available to all league schools.

Additional activities during the first year included inservice workshops for teachers and principals aimed at helping them implement IGE, a monthly meeting of principals of IGE schools, and a league newsletter. The project staff also provided on-site help with individual problems encountered by the schools.

Information for this article was provided by Daniel Loritz,
Director, Individualizing and Humanizing School

grams.

The League Concept: How It Works

During 1972-73, the IGE program was implemented in an additional 11 elementary schools, and a second league was created. The idea behind each league is to "keep things going" — by providing peer support, outside ideas, a source of motivation, identification of resource people, a means for "legitimizing" school change, and a place to air problems and find solutions.

Overall direction for each league was provided by a HUB Committee, consisting of principals and teachers from each participating school. A second linkage was set up within each school building under the name of a Program Improvement Council, which was charged with the direction of the program at the building level. The HUB Committees asked staff members to detail their problem areas and followed up by conducting inservice workshops for over 900 teachers and administrators from both the league schools and other local schools. The workshops covered topics such as "Developing Diversified Learning Activities," "Models for Humanizing and Personalizing Education," "Evaluating IGE Programs," and "Advanced Leadership Institute for Principals and Learning Community Leaders."

The value of the interaction between the schools became apparent, and the project sought other ways for the sharing of ideas. It expanded the Resource Center to include ideas, materials and the names of resource people — all things that could be helpful to an IGE school. Each school was asked to contribute to the Center ideas and information about successful programs and materials developed within their school. Loritz feels strongly about the value of sharing and interaction caused within the schools: "The strategies involved in the program create an environment where interaction between human beings can bring about and create a need for change and improvement."

Although the schools depended heavily on the project staff and the college to give support to the leagues during the first two years, Loritz says, "they are developing an increased power of their own." He says the principals meet monthly to plan league activities and participate in inser-

vice activities. The HUB Committees are now totally made up of teachers who coordinate league activities. This backs up Loritz' conclusion that, "Probably the most outstanding outcome of the project has been the growth of the professionals within the schools."

Coming Up in 1974-75

In its third and final year, the project started an in-depth evaluation of the league and six of the participating schools. At press time, the conclusions of the study were not final. According to Loritz, the initial information "seems to indicate that the data being obtained will be extremely useful in helping schools bring about a system of self-renewal." (Interested persons may request a copy of the study by writing to the project office, located at Southwest Minnesota State College, Marshall, Minn. 56258.)

Participating schools not covered in the study have been provided with the know-how and the materials for doing an evaluation of how well IGE has worked, based on five criteria: (1) how the needs assessment was done; (2) what kind of planning was done for the program; (3) what kind of training was provided for staff; (4) what happened as a result of inservice training or participation in the league; and (5) the outcome, for teachers, administrators and students, as a result of the above four steps.

The League Resource Center is scheduled to be incorporated into a Media Center, which is located at Montevideo and serves the entire region. (The Media Center was initiated eight years ago as a Title III project.) The move is expected to solve one of the problems of such a center — how to get materials out to teachers who are remote to it. The Montevideo Center already has a system for delivering materials via a van to local schools twice weekly.

The League will be continued by the cooperating districts, which will pay approximately \$300 per school plus \$1 for each student, or \$800, whichever is less. A district with three participating schools will pay a flat fee of \$1,000 for membership. A person will be employed half-time at the college to coordinate present activities and those required to expand the IGE programs to leagues of junior and senior high schools in the area.

How To Rate Curriculum Materials

To help guide teachers and administrators in their choice of curriculum materials, the project developed four guides, with the help of 48 elementary school teachers and curriculum consultants in the areas of Math, Social Studies, Reading and Science.

The project also came up with five questions that can help teachers do their own curriculum evaluation:

1. What do you want your students to learn?
2. Why should they?
3. What will they be able to do as a result of learning it?
4. How many ways are there available for them to learn it?
5. How will I (and they) know when they've learned it?

Diagnostic Instruction: A Four-Step Model for Kentucky

Unlike some forms of individualized instruction which places the responsibility for learning on the student, diagnostic instruction requires a complete turn-around. The school becomes accountable. The school must guarantee that each pupil will learn — regardless of his home background, his ability or his personal characteristics. The school must adjust its curriculum and its instructional processes to fit the individual.

Can this challenge be met?

Yes, if the school decides to *rule out* the following: one set of objectives for all learners, one prescribed curriculum and one universal measuring system. Instead, the school must move in the following directions: diagnosing student needs, describing specific performance objectives, and engineering instructional strategies that can aid the student in meeting his own performance objective.

This is the basis of operation for the Learning Center for Diagnostic Instruction, a Title III-funded project with headquarters in Alexandria, Ky. As a regional project that involves 22 public school districts and one nonpublic school district in nine counties, the Center is both a research and development operation and one that follows up with practical application in its Laboratory, Satellite and Peripheral Schools.

The Center's prime objective of providing teachers with an inservice program that can give them the know-how to personalize instruction for each student may be too ambitious, say the project leaders. Nevertheless, they add, "the challenge has been accepted and evidence suggests headway is being made toward the goal."

In order to personalize instruction, according to Project Director Edward Ball, the teacher must be able to perform the following steps:

1. Diagnosing the pupil in relation to his learning needs and his personal characteristics, particularly those that will help or hinder learning.
2. Devising a specific curriculum for the student which will reflect the school's purposes, and the learner's needs and learning style.
3. Devising and following through on appropriate teaching methods.
4. Evaluating the pupil's learning experience, based on his growth, the relevance of the curriculum and the efficiency and success of the methods used.

All four steps are part of a model, which the Diagnostic Center calls "diagnostic instruction." Teachers have maximum flexibility to come up with an appropriate approach to each step.

The Center: How it Works

The administrative unit of the Diagnostic Center supervises the operations of three laboratory schools, nine satellite schools and the peripheral schools in the cooperating districts.

The laboratory schools represent urban, suburban and rural populations. Each lab has three satellite school counterparts where the diagnostic techniques developed



A teacher uses an individual conference as a means of diagnosing and prescribing for student needs.



Information for this article was supplied by Malcolm Patterson, Director of Dissemination for Title III, Kentucky State Dept. of Education, and by William C. Voelker, Supervisor of Dissemination and Instructional Media at the Learning Center for Diagnostic Instruction.

The 'How To' of Diagnosing Instruction

The Learning Center describes diagnostic instruction as a seven-step model, with the added caution that it should never be allowed to become mechanistic, or to deny the "humanness of the learner."

Following are excerpts from the Center's series of Position Papers, which explain the "how to" of the diagnostic model.

1. *Identifying the purposes of the school.* Two approaches are suggested: (a) Form a central study group composed of a representative sampling of the community and the school's professional staff. (b) Extrapolate school purposes from an assessment of learners' needs. As in the first approach, a questionnaire to diverse populations of the community, including students, is desirable.
2. *Identifying learners' needs.* The Center offers this definition of learners' needs: the discrepancy between what the school is trying to achieve as outputs and where the individual is in relation to those outputs. Diagnosis in the *cognitive domain* has been somewhat standardized, and the teacher need only determine where the learner is on the learning continuum and what he needs to learn next. Diagnosing *psychomotor learning* also should present no problem, with the extent of learning in this domain determined through tests of physical prowess, measures of muscular coordination and observation checklists. In the *affective domain*, the Center advises that there are few continuums on which to chart the learner's progress, adding that the school cannot be held responsible for the needs of the "whole" child.
3. *Identifying learners' characteristics.* Four learning characteristics must be taken into account when making a diagnosis: *sensory acuity*, i.e., the five senses; *hypothesizing mannerisms*, or the learner's tendency to make an assumption based on logic or intuition; *reinforcement styles*, or the amount and type of reassurance most appropriate to a particular student; and *change tolerance*, or the student's ability to maintain or increase his learning capacity, regardless of the change in environment. The importance of the learner's tolerance for the change cannot be overemphasized as a key to diagnostic instruction, the Center advises.
4. *Developing performance objectives.* The objective should be individualized, specific in the time allocation and environmental

situation in which learning is to occur, and precise in relating how the learning will be measured.

5. *Developing and implementing instructional strategies* (the specific methods designed and employed by the teacher to help the learner attain the performance objective). Such strategies must take into account: the learner's unique learning characteristics, the nature of the content to be learned, the kind of measuring device and procedures to be used, the teacher's competence and personal qualities, and availability of appropriate facilities and materials.
6. *Applying criterion measures.* The measurement of the learner's acquisition of the intended content or skill is performed to determine if the learning took place and the success of the diagnostic instructional process.
7. *Determination of recycling procedures.* The information gained in step 6 should be used to provide cues for recycling the learner. If the objective was attained, each step of the process would be followed for the next learning cycle. If the objective was not attained, a critique of each step should be made. Step 6 should also provide direction for the optimum point of entry into the learning cycle for the individual.

What Makes for an Adequate Diagnosis?

The Learning Center suggests that the following techniques be considered in any move toward diagnostic instruction:

- Organize and sharpen all presently employed techniques, such as fully utilizing the results of standardized achievement tests.
- Break the broad components of a discipline into minute learning segments; diagnose the status of the learner in relationship to these smaller components in order to pinpoint the pupil's next learning need.
- Develop new tools and procedures for diagnostic purposes. One suggestion is to determine the student's interests when he is in any away-from-school environment.
- Assure quality as well as quantity in the interpretation of amassed information about the pupil. Where possible, allow one teacher to observe student behavior while another teaches. Have more than one teacher interpret data.

in the lab are tested and diffused. A report in the Learning Center's newsletter relates what happened in one satellite school as a result of the project. The School, Walton-Verona Elementary, is housed in a modern open concept building. In a move away from traditional class organization, the school is experimenting with multi-age grouping for primary age youngsters. Each of two sections of 86 heterogeneously grouped children is guided by a team of three teachers and one aide. School personnel say the children learn to respect their fellow student's individual abilities in the group situation, although the age span within the group is up to three years. The teams are encouraged to look to their designated laboratory school, Owen County Elementary, for assistance when needed, although each team operates differently, based on the children's needs and skills.

The peripheral schools are located in districts with neither a lab school nor a satellite school. They are expected to serve as pilot development schools, with their main function one of providing inservice assistance to faculties as they develop the capability for diagnostic instruction. As reported in the newsletter, techniques used by the peripheral schools to "spread the word," include summer extension classes and other inservice activities, slide presentations, consultant services, and conferences on individualization.

How the Center Helps Teachers

The Diagnostic Center looks after the needs of the laboratory, satellite and peripheral schools and provides dissemination, research and evaluation, and planning services. The Center's staff members have also written an outline for a tentative model of diagnostic instruction, which is being tested in the region. A description of the process used is included on page 37.

Hundreds of teachers from the participating schools have been involved in brief experimental ventures as they attempted to learn more about diagnostic instruction. Promising practices, developed by the region's teachers, are made known through clinics, newsletters and video tape.

Ball says the Center is fulfilling its main purpose — that of stimulating interest and enthusiasm for diagnostic instruction. As evidence of its success, the Center attracted 900 educators to two regional clinics in 1973. In March 1974, the Center joined the Kentucky Association for Supervision and Curriculum Development in sponsoring a clinic to enable teams of teachers to demonstrate promising practices in diagnostic instruction. Teams from 21 schools demonstrated for 400 educators diagnostic instruction techniques, including the use of creative writing, individualized reading, and teacher-made and commercial curriculum materials.

What's the Value of the Learning Center?

As the Learning Center ends its third year of federal funding under Title III, it must face the inevitable questions — What good was achieved; what have we learned; where do we go from here?

Some of the lessons were learned up to a year ago — as a result of a second-year evaluation. At that time, the project

staff concluded that the varying levels of commitment to the project and the quality of leadership by participants influenced the progress made during the year. They added an observation that has been made by other regional centers working on other regional problems: "While the project staff sought to become 'insiders,' reality dictated that they were external agents and therefore their influence was probably less than might have been the case."

Six primary evaluation instruments were used to collect data with regard to the amount of change that had taken place in teachers' understanding of diagnostic instruction principles. One (The Study of Mickey Murphy) was a standardized test designed to ascertain a person's skills in diagnosing learners' needs. Three were developed and validated by the project. Another was synthesized from the work of Robert F. Mager and EPIC Diversified Systems (Instructional Objectives Self Test), and the sixth was developed by the U. of Kentucky.

Data from the instruments showed gains in mean scores for Laboratory, Satellite and Peripheral School faculties on a three-year pre-post basis, according to William Voelker, supervisor of dissemination and instruction media at the Learning Center. "As expected from the level of participation, the gains in mean scores were greater for the Laboratory School faculties than for the Satellite School faculties." Going one step further, Voelker noted that the Satellite School faculties made greater gains than did the Peripheral School faculties.

Retention rates are also cited by Voelker as a means of gauging how well the project has done. After two years of the project, the retention rate for the whole region dropped only slightly (from 3.99 percent to 3.58 percent), but the Laboratory schools showed a significant decrease (from 4.02 percent to 0.43 percent).

The Center's accomplishments also can be surmised from the evaluations returned by teachers attending the March 1974 clinic on diagnostic instruction. Of those who responded, 21 percent of the teachers and 25 percent of the principals said they planned to explore diagnostic instruction further, while 8 percent of the teachers said they intended to try some of the techniques in their classrooms. The most encouraging answers resulted from a question on the current use of diagnostic instruction by those attending the clinic. Forty-six percent of the teachers and 42 percent of the principals said they were using diagnostic instruction.

As the Project ended its third year of funding, plans were made for its work to be carried on under a newly approved Title III project titled the Northern Kentucky Laboratory for Diagnostic Instruction. Whereas the Learning Center's function was mainly to provide inservice education, the new Laboratory will focus on the production and dissemination of materials and classroom techniques on diagnostic instruction.

With these considerations in mind, the district that wants to experiment with diagnostic instruction should test its concept in a real situation to determine its practicality. Three cautions are given by the Center: (1) The concept being tested must be clearly understood by those involved; (2) the experiment must be as realistic and controlled as possible; and (3) the experiment must have a precise design, including who will be involved, how they will be involved and how the effort will be evaluated.

Individualized Instruction

Few terms have received the recognition and acceptance among educators, students and the lay public as individualized instruction. Books, monographs, articles and research reports have been written on the topic in great abundance over the past decades. In spite of being a widely accepted term, individualized instruction has proved to be difficult and elusive to implement. This is partly because it is a complex of facets in theory and in implementation.

Definitions of individualized instruction naturally place prime emphasis upon the continuous progress of each individual, based on his needs, interests and abilities. The individual, rather than the class, is seen as the prime focus for the planning of instruction. Yet, individualized instruction continues to be open to varying interpretations. Sometimes, individualized instruction is taken to mean an independent study course for all students. Occasionally, it is taken to mean a different curriculum for every student in the school.

For the purposes of this critique, a broad definition has been accepted whereby curricula and instruction are planned for and by each individual student—in an attempt to meet his unique needs, interests and abilities. It encompasses not only independent study, but group work as a part of each student's program since social interaction skills are needed by every person. It does not mean a totally different curriculum for each student, although each student will probably experience a somewhat different one even from the same stimuli. It does mean that each student will be recognized as a unique person, with his education responsive to his uniqueness.

Perhaps one reason that individualized instruction has been so widely accepted is its agreement with a basic societal value in our culture—the respect for and the recognized value of each individual. Historically, our democratic society has reaffirmed our belief that each person has inherent value and dignity. Certainly such a view is essential in today's pluralistic society.

Individualized instruction agrees with the current emphasis on minority rights. Blacks, American Indians, Orientals, Chicanos and women are demanding that they receive equal opportunity and responsibility. This in turn is making demands upon the educational system. Uniqueness must be recognized and provisions made for it. We have passed the era of the American melting pot where diversity was to be erased in favor of a common American culture. Now there is a deliberate attempt to preserve the diversity among us and not reduce people to a common mold.

Other forces in our society supporting individualization are the current concerns over self-identity and hu-

maneness in relation to the technological aspects of our culture. Students are rebelling against just being a number in a computer. They are rebelling against a curriculum within an institution they consider to be irrelevant for their concerns and interests.

With such concerns and forces operating within the larger society, it is not surprising that almost any set of educational goals and objectives will recognize and provide for the full development of each individual student. Individualization of instruction follows quite logically. It could be expected, then, that a large number of projects applying for Title III funds would involve individualization of instruction.

A number of common themes and procedures occur in the 18 validated projects on individualized instruction. At the same time, each project is unique and has its own definition and interpretation of how to individualize instruction. The validation of each project reinforces the varied emphases which can and have been given to individualized instruction.

Great gaps can occur between what has been proposed for and by schools and what occurs in implementation. However, the visitation and certification of each validated project by an external team has significantly minimized and, in some cases, eliminated this concern. The projects demonstrate considerable agreement between what they proposed to do to individualize instruction and what they actually did in operation.

Important First Steps

One pervasive theme among the projects is that instruction should be based upon a diagnosis and prescription cycle. The individual student is diagnosed by a skilled teacher or resource person for the purpose of determining his learning needs and accomplishments—what he has learned, where he is in his learning at the present time and where he needs to go next. With knowledge of this diagnosis, the teacher develops an educational prescription to help the student achieve his next learning steps. Some projects make evaluation explicit in this cycle, although it is implicit in all. After the educational prescription has been put into practice, students are evaluated to see what growth has been achieved. Then the entire cycle is begun again. The projects view such a cycle as a basic requirement in the individualization of instruction.

Prescription, diagnosis and evaluation appear to be done by the teacher in nearly all of the validated projects. The teacher is very much in charge of the instructional process. The child appears to have limited choices and control over his education in most of the projects.

Many of the projects are concerned with the affective development of students. This usually takes the form of improved attitudes toward self and toward the school. Such concern agrees with the current emphasis in education on the development of values, attitudes and interests as well as the cognitive development of each student.

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Most of the projects do not take into consideration student attitudes toward the primary subject matter. This is an important omission in my opinion. It is possible that students are learning the skills involved in reading and writing, but the projects usually did not study whether students are enjoying the process of reading; whether they choose to write when they are given choices; and how much they are using the library facilities available to them. These are examples of equally important affective behaviors which should be evaluated.

Staff Development: A Basic for Individualization

Staff development is a common activity within the projects and a basic ingredient to the success of most of the projects. Teachers, principals, resource personnel and even parents were given special training to enable them to become more competent. What was actually done and who was included varied from project to project, but staff development was a procedure common to all.

The projects' focus on staff development seems to indicate that the typical teacher is not prepared to individualize instruction without further training. The validated projects must have had highly successful inservice programs or the changes which have been validated probably would not have occurred.

The projects contain a wealth of significant ideas for staff development, which could serve as a tremendous resource for districts that want to improve their inservice education programs. Such inservice training programs are scarce. The 18 projects overcame this professional handicap.

Related to the inservice program are implicit directions for preservice education. For instance, a forward-looking teacher education program could include the following basic elements: knowledge of skills continua, how to manage individualized instruction, ability to use a variety of instructional modes. Preservice education will never be able to fully develop a professional teacher, however. It must be followed by the continued development offered in a strong inservice program.

The projects provide the classroom teachers something which can be easily overlooked as a reward for hard work—professional recognition. The professional recognition given to the teachers in these projects may have been a significant factor in the projects' success.

Individualization: By Content, Time, Space, Materials

A strand common to the projects is a major concern for the skill subjects. Reading, language arts and mathematics are the most common subjects which the projects individualized. Some projects mention other subjects such as social studies, science, art and humanities, but these were not a part of the evaluation design included in the projects' validation reports. To what extent these subjects were individualized is not known.

The skill subjects are sometimes considered the most basic content in the elementary school curriculum. They also may be considered as easier to individualize because a sequence can be defined for them—a common activity for the projects. These continua were presumably used as a basis for diagnosis, prescription and evaluation of each child. A student's progress in the skill subjects

can be tracked more easily than through subjects such as social studies or science which do not have such clear sequential structures.

The element which received the greatest amount of individualization in the skill subjects was time. Each student was allowed to proceed through the given continua or a common bank of skills according to his own pace. A few of the projects recognize and attempt to deal with other elements of individualization such as learning modes.

A caution is in order: Schools must be careful to provide all children with a rich curriculum containing many subject areas and not just a math or a reading curriculum to the exclusion of other important learnings.

Some of the projects indicate some concern for openness in education—an attempt to make the use of time, space and materials less rigid and arbitrary. Presumably, openness makes the resources of education more responsive to the individual.

A few projects also express an explicit concern for the climate of the school and classroom (Salt Lake City, Utah, and Concord, N.H.). This recognition of climate suggests an awareness that individualization means more than merely defining the sequence of skills in reading or mathematics. The total environment of the classroom and the school support individualization.

The Validated Projects: Similarities and Differences

Most of the validated projects deal with individualization in the elementary schools. Attempts to individualize at the secondary level are mentioned in only a few of the projects: Tyler, Tex.; Goshen, Wyo.; and Providence, R.I.

Other characteristics that can be clearly identified in all projects include behavioral objectives, an evaluation design and cost accounting for effectiveness. These are emphasized by the funding agency and all validation reports include them.

The differences among the projects appear to be more of degrees than of distinct qualities. The two most unique seem to be the Washington, D.C., project which attempted to involve parents in the schooling of their children and the Alternative Learning Project in Providence, R.I., which used the community as a part of the secondary level.

The projects vary in degrees along several common characteristics. Some took on much broader concerns of individualization than did others. For example, project U-SAIL in Salt Lake City, Utah, was concerned with language arts, mathematics, science and humanities while A New Adventure in Learning in Tallahassee, Fla., was primarily concerned with language arts. The project in Concord, N.H., was concerned with all students while the project in Sioux Falls, S.D., was concerned with young students who were potential dropouts. The project in Daytona Beach, Fla., individualized the teaching of mathematics through an instructional mode emphasizing teaching tapes, supplemented by small and large group instruction, while U-SAIL developed over 4,000 learning modules with a variety of instructional modes. Some projects explore a systems approach (U-SAIL); some included a process of planning for change (Concord, N.H., and Tyler, Tex.); some had more comprehensive and creative evaluation designs (Concord, N.H., and Wayne, N.J.).

Dissemination and Diffusion Strategies

The projects often use a systems approach for dissemination (Salt Lake City, Utah; Hackensack, N.J.; and Concord, N.H.) as opposed to a simplistic approach. In most projects, emphasis is placed on the adaptation of the project as a whole, or of portions of it, rather than as a recipe to be followed in order to improve American education. This is a sound approach. Projects seem to view their local situation as unique and make accommodation for the uniqueness rather than make attempts to erase or reduce this variability—if possible. Thus, the dissemination process recognizes and values local schools.

Significant products developed by a number of projects which could be easily transferred are the various continua of math and reading skills. They probably are critical in attempts to individualize math and reading, and all interested schools should have access to them. Their acceptance or adaptation could facilitate the development of individualized instruction across the country.

Some projects emphasize the process of change within their own development. Tyler, Tex., is a notable example since it deliberately specified change procedures. Documentation of how the projects changed internally as they developed could be a significant contribution to education. An awareness of factors and procedures contributing to and impeding change are extremely important in dissemination/diffusion attempts by projects.

The extent to which projects involved groups other than professional staff is difficult to determine. Most projects included activities to inform parents of their work, and some involved parents as an inherent part of their program (Washington, D.C.; Portsmouth and Providence, R.I.; and Moore, Okla.). Other than involving or informing parents, however, there appeared to be little consideration of other groups in developing projects.

There is some evidence that the projects have had some effects on other parts of the schools in which they were located, on other schools in the district and, to a more limited degree, on other schools in the geographical region. Some projects indicated that other schools were considering or implementing all or part of their approach (Concord, N.H., and Valdosta, Ga.).

A major consideration in any dissemination/diffusion effort is the necessity for creation of a supportive environment. This factor has been documented as a necessity for programs advocating change. Creating a supportive environment may be done in a variety of ways, but the changes need to be nurtured carefully both within the school and by the larger community.

Careful consideration should be given to what can be realistically exported from these projects. All of the projects have extensive developmental histories. These may be a critical variable which cannot be easily exported. They can serve, however, as models of excellence which other schools might consider and build on.

Recommendations for the Future

The 18 validated projects exemplify individualization of instruction and demonstrate that schools can do it.

The following recommendations are made not to belittle in any way the significant progress by the 18 projects, but to suggest what else might be considered:

1. *Individualization should be developed along many dimensions.*

One characteristic which most projects held in common is that individualization occurs in terms of pacing. A few projects investigated individualization along other dimensions. Portsmouth, R.I., individualized learning modes; Blackfoot, Idaho, individualized instructional modes; and Salt Lake City, Utah, and Moore, Okla., tentatively explored individualization in subjects other than mathematics and reading. Based on information contained in the validation reports, however, subject areas other than math and reading were not included in the evaluation designs for the projects.

Individualization should now be explored in the social studies, science, art, music, physical education and all other subject areas offered by schools. It should not be limited to reading, language arts and mathematics.

Individualization should also be explored in terms of other elements of schooling. Goals or objectives might be individualized to a greater extent. For example, students may differ in their goals—gaining an in-depth knowledge of geology; being proficient in foreign languages; becoming an involved citizen by participating in a community action program. Individualization should occur in terms of content studied, learning activities provided, the kind of evaluation conducted, and the resources and instructional modes used for learning.

As examples of individualizing content, social studies could allow students to study a variety of cultures and yet develop understandings about the interdependence of humankind. General science could provide for an array of specific fields of science from which students could select, and yet all could develop some basic skills in scientific methodology.

A variety of instructional modes should be offered for individualization: independent study, small group interaction, large group presentations, lectures, discussions, experiments and inquiry. Individualization could include a multitude of activities for and by students: reading books, taking field trips, building models, consulting experts, creating artistic products, producing charts and diagrams, discussing films, filmstrips and study prints.

Evaluation could be individualized by various means of determining student progress. One student might be given an objective test, another an essay to write, another a diagram to produce or another an interview.

The matching of personality characteristics between teachers and children should be explored for individualization. Some students learn best from a warm, supportive, nondirective teacher; others learn best from a teacher who is strict, upholds high standards and places demands for learning on students. Which teachers are warm and supportive or brisk and demanding should be consciously identified and matched with students who learn best from such teachers.

Some of the 18 projects tentatively investigated a few of the above dimensions; others did little or nothing with them. All of these dimensions should now come under serious investigation. With such exploration, individualization occurs not just in instruction, but along other dimensions of schooling as well.

2. *Personalization of education should be implemented.*

Personalization as defined by some educators today seems to include individualization as has been developed by the 18 projects, plus individualization along the other dimensions named above. Personalization also

seems to mean more than individualization and includes at least two new elements: students have a choice of real alternatives in the school program, and they have basic legitimate decision-making power over their education.

In the concept of personalization, the student receives guidance and practice in choosing among alternatives and in making basic decisions.

A few of the 18 projects were concerned about personalization as defined here: Providence, R.I.; Lynchburg, Va.; and Goshen, Wyo. Some of the projects put into operation a personalized program for each student to the extent of their resources, but these attempts were quite limited.

3. The types of procedures and devices used to evaluate the effects of individualization and personalization should be broadened.

The validation reports contain a narrow range of evaluation instruments and procedures to assess the attainment of program objectives. Also, the designs of the 18 projects are rather restricted in terms of what was to be evaluated and how. (Wayne, N.J., is the notable exception and seems to have a creative evaluation design.) Undoubtedly, the state of the field in evaluation affects the designs developed and the decisions made. The desire for "hard scientific" data or "empirical" data also influences what is evaluated and how.

Objective, standardized tests were the most commonly used and accepted instruments by the projects and validation teams. These instruments were appropriate to assess the progress being made by students in reading and math skills. Almost all of the projects, however, showed concern for the affective development of their students. Objective, standardized instruments are not always available for some of these concerns and some of the instruments available do not always possess high validity and reliability. Although the difficulties in evaluating affective development must be recognized, they should not be allowed to minimize this important concern.

Subjective data in terms of observations, judgments by and opinions of professional people may be the only documentation available for significant aspects of affective development. For example, in the two on-site visits I made, significant developments had occurred in the affective development of students, but they were difficult to document. Principals in Salt Lake City, Utah, mentioned the dramatic reduction in children being sent to the office for misbehavior. The warm, supportive human relationships among children and staff in an interracial school in the Southern city of Tallahassee, Fla., was very evident to me as an observer. The color of one's skin did not matter in that school. These are highly significant educational achievements, but ones which cannot be documented by objective, standardized tests. Provision must be made to document growth and evaluate progress in all areas of development.

4. Objectives or goals of a broader nature should be included in new designs for educational programs.

In nearly all of the projects, evidence is available to indicate that with individualization of instruction, students can be taught reading and math skills both effectively and efficiently. This is significant documentation. Now, however, schools should be charged to maintain skill development and to extend their efforts to broader types of behaviors. For example, enjoyment of reading, in learning how to learn, developing values and in-

quiry skills, empathy for humankind, and positive attitudes toward learning are equally important to students.

The schools should now devote their resources to developing ways of documenting increments in growth and formally evaluating student achievement in the broader behaviors with which education is concerned. These broader behaviors require more time to develop than specific skills in the subject areas. Thus, a year may not be enough time to show growth in developing values and attitudes. Evaluation must become more longitudinal and a variety of procedures and devices must be utilized to evaluate growth in broad goals of schooling.

5. Schools should carefully nurture conditions which will foster desirable changes in education.

Investigating new ways of evaluating and developing broader objectives requires a departure from some accepted conventions in schools. Those who are willing to deviate from the "tried and true" to explore new ideas and procedures should do so in a supportive environment. The atmosphere must be one where mistakes can occur and be corrected, where concern for student and teacher growth is always paramount, and where the resources of the school are committed to assisting each student in obtaining the best possible education.

6. The financial support for education should be increased.

The reports of the 18 projects could be considered as aspects of excellence in education. Yet, each project required financial assistance beyond what is normally available to schools in order to achieve that degree of excellence. This strongly suggests that if students are going to have the kind of education we desire for them—and that they need in order to function effectively in a democracy—more resources must be made available for education. School staffs need additional financial resources to help them gain access to new knowledge, concepts and procedures, to put the information to use in the local situation, and to evaluate the new knowledge and implementation. New ways to utilize these resources are also needed. The Tyler, Tex., project, for example, appeared to achieve significant changes in schools by utilizing limited resources in a rather innovative way.

7. A new vision of education should be developed in which education is seen as a process rather than a product.

We should be less concerned with what we teach a child and more concerned with the kind of person we are helping to develop. Schools have been and rightfully should be concerned with helping students learn certain basic knowledge and skills that our society considers essential. With the knowledge explosion, however, we cannot begin to teach the accumulated knowledge which is available. There is far too much! Further, the rate of change in many aspects of our society suggests that the school cannot possibly select for teaching that knowledge which students will need to know when they are adults. This historical view of education is negated by the rate of change around us.

The world of 2000 will be quite different from the one of 1974. This suggests that the schools and society must take on a new view of education—what kind of a person is needed in a world of rapid change and how can the schools most effectively contribute to the development of those characteristics.

Validated Projects: Change Plus Effectiveness

Individualization makes a difference in the lives of students, teachers, schools — and Title III projects. That conclusion emerges from a survey of the Title III projects in individualized instruction that were validated during 1973. Each project was validated on the basis of evidence on cost, effectiveness and exportability (whether it could be used in another school system). The validation visits were conducted on-site by an out-of-site team. In all, 107 Title III projects were validated in eight areas of concern (individualized instruction, early childhood education, reading, special education, environmental education, teacher/staff development, academic curriculum and special curriculum).

In line with its legislative mandate to disseminate information on Title III, the National Advisory Council on Supplementary Centers and Services made known the results of the validation efforts through distribution of "Innovative Educational Practices," which briefly described each of the projects. The result was overwhelming, judging by the requests for more information on the projects. We concluded: School districts want to share in the educational success experienced by another district; schools with successful (validated) programs are equally interested in sharing what they have learned; a successful innovation, incorporated into a school district, does not die when federal funding ceases. It propagates itself, takes other forms, changes its forerunners and whatever follows.

We asked the 18 individualized instruction projects to respond to a questionnaire to bring us up to date on what has happened since validation. The results follow.

Sixteen of the projects have been continued in their respective school districts. Two of the projects, SOLVE in Concord, N. H., and Identification and Remediation-Learning Disabilities in Sioux Falls, S. D., have terminated. In both cases, however, the practices introduced by the projects continue to be used by their respective districts.

Four projects are still within the federal funding period, and three of the four indicated they definitely will be maintained with local funds. When asked "At what level of funding did the project continue, as a percentage of the last year of federal funding, three reported a rate of from 100 to 125 percent. Seven others did not require funding above the district level in order to be continued. As explained by W. Dale Fallow, Director of the Grants Pass (Ore.) project, "The Items Approach to Individualized Instruction: "The

project was designed to operate within the dollar amount normally spent in the areas of reading, math and language mechanics."

The reports from the projects on the number of on-site visitors, and requests for information by phone and mail can only be termed phenomenal. The U-Sail project, Salt Lake City, reported that it had 3,000 on-site visitors and 550 requests for information. U-Sail builds its individualized instruction program on the foundations of inservice training for all staff and effective classroom management techniques. The Grants Pass, Ore., project had almost 600 on-site visitors and 1,100 requests for information from 39 states and three foreign countries.

Two projects in the state of Florida reported a lot of interest from other districts. Seventy-six persons visited A New Adventure in Learning, a Tallahassee project for K-3 students, and another 1,100 received information on the project. Project SMART (Success in Mathematics through Aural Reading Techniques) had 100 on-site visitors to its Daytona Beach site and another 800 requests for information. Reports from the other projects for on-site visits plus information requests cited figures ranging from 800 (Learning Experiences Module, Hackensack, N. J.) to 200 (Individualized Language Arts Diagnosis, Prescription and Evaluation, Weehawken, N. J.) with most falling in the 500 range. A project in Tyler, Tex., specifically charged with the dissemination of information on a statewide network of Demonstration Schools in Individualized Instruction, attracted 5,000 visitors to the schools during one school year.

Adoption/Adaption: Hard To Determine

The projects generally have no way of knowing exactly what happens in other school districts as a result of the on-site visits and information giving. Usually, the project will make an impact on its closest neighbors first, or its home state, but this is not always true. Sometimes one article in a national magazine can momentarily overwhelm a project with requests for on-site visits and information.

But, the ultimate result of dissemination — adaption or adoption of a program by another district — does happen. The leader in the survey in the amount of adoption/adaption of its program by other schools is U-Sail. Full adoption of the project will take place in FY 1975 in 34 Salt Lake City schools, 26 schools in other Utah districts, 41 schools in the ACIL project in Arizona and 21 schools in

other states. Partial adoption of U-Sail has taken place in 140 elementary schools to date, according to Project Director Carma M. Hales. Almost all of the validated projects cited at least one specific school or district that had replicated their project in its entirety. Even more activity was reported in the partial adoption of a project, e.g., a reading component.

Exact figures on adoption/adaption are hard to put together. Thelma Newman, Director of Project Open Classroom, Wayne, N. J., tells why: "The project is completing its first year of dissemination. Two districts are definite for a partial adoption. Approximately 200 districts have purchased products developed by our staff. The purchase of our Language Arts Kit and Math Resource File implies a partial adoption of our program."

Another view on the success of adoption/adaption is given by Lawrence T. Mello, Director of Project CAM in Portsmouth, R. I. Mello reported that a resource center modeled after the CAM project is available one day a week to all Providence, R. I., teachers. He notes further that "the same situation exists in Cumberland (R. I.) where teachers who have previously had the CAM workshops are now conducting similiar type workshops for other teachers in the town, and gearing production of materials to individual student objectives, in the CAM manner. Several other school systems around the state have also begun to adopt successful elements of Project CAM into their teaching situations; beginning after exposure to CAM workshops."

Dissemination takes money, which can impede the growth of a concept. Lawrence Paros, Director of the Alternate Learning Project in Providence, R. I., says that this specific project has not really been developed although inquiries have been received from all parts of the state. Why? "Need for \$\$ for purposes of dissemination," Paros answered. Dissemination usually takes the form of written materials, radio and TV spots, workshops and seminars, presentations at national meetings. For example, a Torrington, Wyo., elementary education project, Reinforcing Personalized Instruction, was featured at the National Association of Elementary School Principals convention. Six to eight schools, including a U. of Wyoming Lab School, have already adopted parts of the project.

The Big Question: What Happens to Kids?

Of most concern to the projects and the adopting/adapting districts is "What is the result? What happens to kids and to learning? Does individualized instruction make a discernible difference?"

When we asked each project director to summarize briefly the effects the project has caused, many cited cognitive gains, or changes in behavior or enthusiasm for school, changes in total school operation or policy, changes in

teaching style. Excerpted below are some of the responses we received:

Project Place (Lynchburg, Va.; Edwin L. Warehime, Director): "Increase in percentage of children at or above predicted achievement in reading and mathematics. Significant increase in number of students achieving President's Physical Fitness Awards. Significant drop in students removed to special education classes. Significant increase in readiness scores of five-year-olds. Significant gain in motivation of five-year-olds. Ninety-seven percent positive support by parents; 90 percent positive support by teachers."

Project Stay (Moore, Okla.; Tom Butler, Director): "The project has been of major significance in encouraging the parents and the school to focus attention on the child's needs. . . . We have been pleased with the positive attitudes toward school which are currently being reflected by the children's behavior and progress."

Individually Prescribed Elementary Instructional Program (Valdosta, Ga.; Ola R. Dupree, Director): "We show positive results in every area, with most spectacular gains in the affective areas. IPI (Individually Prescribed Instruction) has required drastic changes in classroom management. Students are interested and enthusiastic, even those who were never successful before. Library circulation has more than doubled in every school. . . . Certain types of discipline problems have decreased almost to the vanishing point. Pupils are more at ease in the presence of adults in general. . . . Individual student records generally show more than one level of progress per year."

New Adventure in Learning (Tallahassee, Fla.; June Johnson, Director): "When the project began in September 1970, only 10 percent of the grade 1-3 population read on or above grade level on the Gilmore Oral Reading Test. This was raised to 51 percent by May 1973. Positive mean gain in IQ scores was demonstrated by selected disadvantaged pupils (20-30 percent of total population). . . ."

Parent-Partners Traineeship (Washington, D. C.; Gussie M. Robinson, Director): "Pupils involved in the project have shown greater interest in working with parent-partners; greater interest in assignments, improvement in papers, interest in keeping folders, positive change in attitude."

Curriculum Change Through Nongraded Individualization (Blackfoot, Idaho; Darrell K. Loosle, Director): "The project has affected the entire district in identifying methods of meeting individual student needs. Student achievement has made some gain, but not significantly. However, student self-concept has been significantly affected."

ESEA Title III Projects in Individualized Instruction

1973 VALIDATED PROJECTS IN INDIVIDUALIZED INSTRUCTION

Parent-Partners Traineeship (PPT) Gussie M. Robinson, Project Director, Maude Aiton Elementary School, 533 48th Place N.E., Washington, D.C. 20019 (202/396-4316).

A New Adventure in Learning (Grade level: K-3); June Johnson, Project Director, W. T. Moore Elementary School, Dempsey Mayo Rd., Tallahassee, Fla. 32304. (904/877-8595).

Success in Mathematics through Aural Reading Techniques (SMART) (Grade level: 5-6); Jack Duncan, Project Director, Educational Development Center, Box 1910, Daytona Beach, Fla. 32015. (904/255-6475).

Individually Prescribed Elementary Instruction Program (Grade level: 1-8); Ola R. Dupree, Project Director, % Lowndes County Board of Education, Valdosta, Ga. 31601. (912/242-0986).

Curriculum Change through Non-graded Individualization (Grade level: 5-9); Darrell Loosle, Project Director, Route 2, Box 294A, Blackfoot, Idaho 83221. (208/684-4450).

SOLVE (Grade level: K-12); Glen C. Belden, Project Director, 37 Pleasant St., Concord, N.H. 03301. (603/224-9461).

Individualized Language Arts Diagnosis, Prescription and Evaluation (Grade level: K-12); Jeanette Alder, Project Director, Roosevelt School, Louisa Place, Weehawken, N.J. 07087. (201/865-2274).

Project Open Classroom Thelma Newman, Project Director, PO Box 1110, Wayne, N.J. 07470. (201/696-3363).

LEM — Learning Experience Module Eleanor Russo, Project Director, Fanny M. Hillers School, 355 State St., Hackensack, N.J. 07601. (201/488-4100).

STAY: (School to Aid Youth) (Grade level: 1-3); Tom Butler, Project Director, 400 N. Broadway, Moore Public Schools, Moore, Okla. 73160. (405/794-6636).

A Systems Approach to Individualized Instruction W. Dale Fallow, Project Director, 310 San Francisco St., Grants Pass, Ore. 97526. (503/479-6433).

Alternate Learning Project (ALP) (Grade level: 9-12); Lawrence Paros, Project Director, 180 Pine St., Providence, R.I. 02906. (401/272-1450).

Project CAM — Concepts and Materials Lawrence T. Mello, Project Director, 321 E. Main Rd., Portsmouth, R.I. 02871. (401/846-0383).

Identification and Remediation-Learning Disabilities Robert R. Farrald and John D. Balfany, Project Directors, 701 South Western, Sioux Falls, S.D. 57104. (605/336-3096).

A Project to Develop and Test Follow-Through Techniques for Encouraging DSII Visitors to Initiate Individualized Instruction Programs after Visitation N. W. Kilgore, Project Director, Tyler Independent School District, PO Box 237, 1312 W. 8th St., Tyler, Tex. 75701. (214/597-5511).

Utah System Approach to Individualized Learning (Grade level: K-6); Carma M. Hales, Project Director, 1421 S. 2200 East, Salt Lake City, Utah 84108. (801/582-1344).

Project PLACE — Personalized Learning Activity Centers for Education (Grade level: K-6); Edwin L. Warehime, Project Director, 10th and Court Sts., Lynchburg, Va. 24504. (804/847-1365).

Reinforcing Personalized Instruction (Grade level: K-6); Ed T. Jolovich, Project Director, 436 E. 22nd Ave., Torrington, Wyo. 82240. (307/532-2643).

ALABAMA

STEP (Solutions to Educational Problems), Don T. Morton, Etowah County Board of Education, Etowah County Courthouse, Gadsden, Ala. 35901

MUST (Multi-level Utilization of Student Talent), Tommie D. Gum, Walker County Board of Education, PO Box 311, Jasper, Ala. 35501

Demopolis LAP Program (Teacher-made Learning Activity Packages), Jerry L. Young, PO Box 700, Demopolis, Ala. 36732

Project AIM (Assessment of Individualized Mathematics), Carolyn Black, Jasper City Schools, PO Box 500, Jasper, Ala. 35501

A Lighthouse Middle School, Tim O. Al-Stewart Ave., Opp, Ala. 36467

Individualized (Expandable) Study Center, A. J. Townsend, Russellville City Schools, PO Box 880, Russellville, Ala. 35653

The Four R's: A Strategy for Self Directed Learning, Lanny Gamble, Cullman City Board of Education, PO Box 887, Cullman, Ala. 35055

HELP (Help Educable Learners Progress), C. E. Traweek, Enterprise City Board of Education, PO Box 834, Enterprise, Ala. 36330

A Project To Create a Network of Middle Schools, Lenwood Holliman, Pickens County Board of Education, PO Box 32, Carrollton, Ala. 35447

ARIZONA

Project PACE (Project Analysis Through

Computer Evaluation), Barbara A. Guyton, 470 E. Valencia Rd., Tucson, Ariz. 85706

ACIL (Arizona Consortium for Individualized Learning), L. Leon Webb, 2916 N. 68th St., Scottsdale, Ariz. 85251

ARKANSAS

Cooperative Help in Learning Discoveries, E. P. Rothrock, Boston Mountains Cooperative for Federal Programs, PO Box 188, Prairie Grove, Ark. 72753

Individualized Learning Center for Slow and Gifted, Howard Miller, Carlisle School District, Carlisle, Ark. 72024

Listening Resource Center, Jim Scott, Hamburg Public Schools, PO Box 72, Hamburg, Ark. 71646

CALIFORNIA

Reading Program: Exploration of Parents' Occupations, M. Delbert Lobb, 10365 Keller Ave., Riverside, Calif. 92505

Self-assessment + Teacher Prescription = Humanized Performance, James R. Jordan, Auburn Union Elementary School District, PO Box 551, Auburn, Calif. 95603

Language and Differentiated Reading Instruction; Diagnostic-Prescriptive Individualized Mathematics Instruction, Keith B. Walton, 14535 E. Whittier Blvd., Whittier, Calif. 90605

Operation Roadshow, Russell M. Howard, 337 Placerville Dr., Placerville, Calif. 95667

Reading Improvement through Home Help, James M. Slezak, Escondido Union Elementary School, 5th Ave. & Maple St., Escondido, Calif. 92025

A Continuous Progress Basic Skills Laboratory, Arnold Finch, 2348 Mariposa St., Fresno, Calif. 93721

Nuffield Approach to Mathematics; Assessment of Learning; Prescriptive Instruction for Early Childhood Education, James R. Runge, 4750 Date Ave., La Mesa, Calif. 92041

Mobile Computer Mathematics Laboratory; Individualized Mathematics Learning System; Individualized Instruction through Open Structure; and Prescription-Resource Center (P-A-R), William J. Johnston, 400 N. Grand Ave., Los Angeles, Calif. 90051

Mathematics Achievement Program (MAP), Ramon C. Cortines, 351 S. Hudson Ave., Pasadena, Calif. 91109

Multiage Grouping in Early Childhood Education, Tomaline S. Lenox, Belle Benchley Project Office, 7202 Princess View Dr., San Diego, Calif. 92120

CONNECTICUT

School within a School Program, Vincent Loffredo, Middletown High School, 695 Newfield St., Middletown, Conn. 06457

ANISA, Richard Lincoln, Board of Education, Suffield, Conn. 06078

Project 3-R, George Bondra, Cooperative Services Center, East Granby, Conn. 06026

Talcott Mountain Science Center, Donald LaSalle, Avon, Conn. 06001

Project PEP, Lloyd Schmidt, State Dept. of Education, Hartford, Conn. 06115

A Model Program, Robert Hale, Branford Intermediate School, Branford, Conn. 06405

SHIP (IGE), Louise Wickware, Thompson Memorial School, North Grosvenordale, Conn. 06255

Dial-Select, Van Ftergiotis, Hall High School, West Hartford, Conn.

Senior Citizen Tutoring, Rosalie Saul, Read the School, Redding, Conn. 06875

DELAWARE

Demonstration-Laboratory Classroom, Meredith Roberts, New Castle-Gunning Bedford School District, New Castle, Del. 19720

FLORIDA

Perceptual Motor Training for Trainable Mentally Retarded, Jennifer Nix, Oak Grove, 1527 Lincoln Ave., Panama City, Fla. 32401

Continuous Progress for Handicapped Youngsters, Marian Peacock, Carr School, Clarksville, Fla. 32430

Individualizing Spanish for Speakers of English, Mirta Vega, 150 N.E. 19th St., Miami, Fla. 33132

Improved Learning through Personalized Instruction, Carole McMillan, 1741 Francis St., Rm. 11, Jacksonville, Fla. 32207

Developing Models for Special Education, Mary Ellzey, PO Box 499, Monticello, Fla. 32344

A New Adventure in Learning, June Johnson, W. T. Moore Elementary School, Dempsey Mayo Rd., Tallahassee, Fla. 32301

Pre-School Program for Emotionally Disturbed and/or Potentially Learning Disabled Children, Jan D. Courtney, 4000 Silver Star Rd., Orlando, Fla. 32808

Mobile Center for the Motor Impaired, Marjorie Crick, 3323 Belvedere Rd., West Palm Beach, Fla. 33402

Prescriptive Curriculum in Physical Education for the Mentally Retarded, Edward A. Brown III, Parkland Special Ed. Center, 5025 76th Ave. N., Pinellas Park, Fla. 33565

Pupil Personnel Services Demonstration Project, Ralph Bailey, All Childrens Hospital, 801 6th St. S., St. Petersburg, Fla. 33701

Success in Mathematics through Aural-Reading Techniques (SMART), Jack Duncan, PO Box 1910, Daytona Beach, Fla. 32015

Model for Exceptional Child Education, William L. Kitshing, PO Box 190, Chipley, Fla. 32428

Children's Concerns: A Curriculum Base, Charles R. Gadd, 1108 N.W. 16th Ave., Ocala, Fla. 32670

GEORGIA

Individually Prescribed Elementary Instructional Program, Ola R. Dupree, Lowndes County Board of Education, Box 1227, Valdosta, Ga. 31601

IDAHO

Individually Prescribed Instruction through Multi-grading, Darrell Loosle, Box 249A, Wilson Bldg., Rte. 2, Blackfoot, Idaho 83221

ILLINOIS

Pre-Algebra Development Center,

Dorothy S. Strong, Board of Education, Area A Office, 1750 E. 71st St., Chicago, Ill. 60649

INDIANA

Project STIMULUS, Howard N. Uhrig, 635 S. Main St., South Bend, Ind. 46623

Performance Accountability (Uniform Reading Program), Margaret Ratz, 5935 Hohman Ave., Hammond, Ind. 46320

Open-Space Education in a Conventional Building, Salvatore F. Scaglione, 709 Stafford Rd., Plainfield, Ind. 46168

Parent-Child Mobile Classrooms, Carrie B. Dawson, 620 E. 10th Pl., Gary, Ind. 46402

IPI Mathematics, Edward M. Garrigan, Paoli Community Schools, Elm St., Paoli, Ind. 47454

High School Reading Program, Sidney E. Austin, Jay School Corp., 3rd floor, Courthouse, Portland, Ind. 47371

Performance as a Basis for Credit, Ken Springer, 6501 Wayne Trace, Fort Wayne, Ind. 46816

Developing Efficient Patterns of Learning Management, Larry G. Dugle, Madison Consolidated Schools, 1st & Broadway, Madison, Ind. 47250

Project Launching Pad, Irie Horral, Princeton Community High School, Princeton, Ind. 47670

Mobile, Audio, Individualized Learning Systems (MAILS), John E. Perkins, E. Central High School, Sunman, Ind. 47041

Learning Tutors Offer Instructional Assistance, Ralph Van Hoosier, Switzerland County High School, R.R. #3, Vevay, Ind. 47043

KANSAS

Individualized Instruction in Family Living, Steve McClure, 1800 S. 55th St., Kansas City, Kan. 66106

KENTUCKY

Learning Center for Diagnostic Instruction, Edward E. Ball, Campbell County Board of Education, 8002 Alexandria Pike, Alexandria, Ky. 41001

An Operational Design To Facilitate Change Within a Region, Jack Neel, Western Kentucky U., Bowling Green, Ky. 42101

LOUISIANA

Independent Study for Academically Talented Students, Jacquelyn A. Shipp, Franklin Parish School Board, PO Box 349, Winnsboro, La. 71295

A Planning Grant to Implement Team Teaching, Ted Gullatt, Iberville Parish School Board, PO Box 151, Plaquemine, La. 70764

MAINE

Educational Reform toward Individualiza-

tion, Herman C. Lord, Edward Little High School, Auburn Heights, Auburn, Me. 04210

Individualized Learning and Responsibility Development, David P. Day, Maine School Administrative District #3, Unity, Me. 04988

MINNESOTA

Blaine Senior High School Project, Robert Blaine, Anoka-Hennepin Independent School District #11, PO Box 191, Anoka, Minn. 55303

The Identification, Motivation, and Matching of Gifted Students with Talented Professionals in a Mentor Team, Jane Korte, Independent District 742, Seton Hall, St. Cloud, Minn. 56301

Legitimizing Education for Individual Life Styles, Barbara J. Fraser, North High School, 15th & James, Minneapolis, Minn. 55411

Secondary Individually Guided Education Curriculum Development, Richard Roth, Parkview Junior High School, Roseville, Minn. 55113

Urban Centers for Quality Integrated Education, B. M. Benton (Field) and G. A. Anderson (Hale), Field School, 4645 4th Ave. So., Minneapolis, Minn. 55409; Hale School, 1220 E. 54th St., Minneapolis, Minn. 55417

Individualizing and Humanizing School Programs, Daniel Loritz, SW & WC ESA, Southwest Minnesota State College, Marshall, Minn. 56258

Individualized Instruction in an Elementary School, 5100 9th St., Winona, Minn. 55987

MISSOURI

An Integrated Individualized Curriculum Model, David L. Learman, 1916 Elm St., St. Charles, Mo. 63301

Individualization for Successful Learning, Carroll J. Lowrance, East Primary School, Waynesville, Mo. 65583

Computer Managed Individualized Learning, Geraldine W. Johnson, 911 Locust St., St. Louis, Mo. 63101

MONTANA

Behavioral Term Curriculum: Small School Style, James A. Longin, Fort Benton Public Schools, Fort Benton, Mont. 59442

NEBRASKA

VTPM (Videotape Package-Mathematics), Russel Thompson, Arnold Public Schools, Arnold, Neb. 69120

NEVADA

Individualized Basic Skills Laboratories, Vernon C. Rowley, Research & Development, Carson City School District, PO Box 1000, Carson City, Nev. 89701

Interim EMR/EH Program, Dennis Ortwein, Federal Programs, 2832 E. Flamingo Rd., Las Vegas, Nev. 89121

Interdisciplinary Reading Program, Richard Wright, Federal Programs, 425 E. 9th St., Reno, Nev. 89502

NEW HAMPSHIRE

Project SOLVE (Support of Open Learning Environments through Varied Educational Teams), Glen Belderi, 37 Pleasant St., Concord, N.H. 03301

Project SHARE (Sharing Methods Activities to Personalize Learning), Cliff Wing, Bow Memorial School, RFD #3, Concord, N.H. 03301

NEW JERSEY

Project ACTIVE (All Children Totally Involved Exercising), Thomas M. Vodola, Township of Ocean School District, Dow Ave., Oakhurst, N.J. 07755

Open Classroom Individualized Structured Learning, Thelma R. Newman, PO Box 1110, Wayne, N.J. 07470

Dale Avenue Urban Early Childhood Education Project, Helen Hanson, 21 Dale Ave., Paterson, N.J. 07505

Individualized Language Arts; Diagnosis, Prescription, and Evaluation, Jeanette Alder, Roosevelt School, Louisa Place, Weehawken, N.J. 07080

Interning for Learning, Harry Brown, Rio Grande Elementary School, Delsea Dr., Rio Grande, N.J. 08242

NEW YORK

Utilization of Human Resources for the Purpose of Individualizing Instruction, Therese A. Levesque, S. Orangetown Central School District, 10 Western Hwy., Orangeburg, N.Y. 10962

Model Programs to Assist Teachers in Utilization of Individualized Approaches to Learning, Alan Osterhoudt, BOCES, Herkimer County Community College, Herkimer, N.Y. 13350

Instructional Support System, Thaddeus Obloy, Guilderland Central Schools, State Farm Rd., Guilderland, N.Y. 12084

Redesign for Mathematical Relevancy, Russell M. Waldron, E. Syracuse-Minoa Schools, 407 Fremont Rd., East Syracuse, N.Y. 13057

Education and Community Involvement: The Oxford Attempt, Charlotte Gregory, Oxford Academy & Central School, S. Washington Ave., Oxford, N.Y. 13830

A Regional Approach to Systematic Planning for Individualized Instruction, Theodore C. Roth, Suffolk BOCES #2, 201 Sunrise Hwy., Patchogue, N.Y. 11772

OHIO

Steel Valley Project for Improving Elementary Education, M. Wilds, Liberty Bldg. of

Education, 4115 Shady Rd., Youngstown, Ohio 44505

Western Ohio-Wright State MUS/IGE League of Schools, Charles W. Stephens, 1414 Bowman Rd., Springfield, Ohio 45502

ORBIT (Organizing Resources by Instructional Teams), Harbison Pool, 65 N. Pleasant St., Oberlin, Ohio 44074

OKLAHOMA

Colbert CAP, Ann Krueger, Colbert Public School, Box 310, Colbert, Okla. 74733

INTERBLOCK (An Interdisciplinary Team Teaching Situation within a Block of Time for Non-committed Learners), Sally Hedges, Norman High School, W. Maine & Pickard, Norman, Okla. 73069

Multi-phased Individualized Education Project, Bill Pickle, 900 N. Klein, Oklahoma City, Okla. 73106

STICC (Success-through Identification & Curriculum Change), S. Sue Haile, One South Mission, Sapulpa, Okla. 74066

Pontotoc County Laboratory for Learning Disabilities, Elton Stewart, 321 W. 18th St., Ada, Okla. 74820

OREGON

A Systems Approach to Individualized Instruction, W. Dale Fallow, 310 San Francisco, Grants Pass, Ore. 97526

Institutionalizing Innovations in Oregon's Small Schools, Donald F. Miller, 942 Lancaster Dr., NE, Salem, Ore. 97310

PENNSYLVANIA

Adaptive Program in Open Space Education, Joseph Ferderbar, 2001 Old Lincoln Hwy., Langhorne, Pa. 19047

CONCERN (A Project to Develop Appropriate Learning Experiences for Middle School Students); SHARE (Dissemination & Inservice of Innovative Practices), Hughes D. Brininger, 3740 W. 26th St., Erie, Pa. 16506

Open Education, Robert J. Labriola, Stayer Research & Learning Center, Millersville State College, Millersville, Pa. 17551

Individualizing Instruction by Differentiated Staffing, John F. Hall, 1148 Wood St., California, Pa. 15419

Open Space-Team Teaching, C. W. Rohm, West Allegheny Elementary Schools, RD #1, Imperial, Pa. 15126

CONN-QUEST, John B. Shavel, Junior High West, 215 Falls Ave., Connellsville, Pa. 15425

Adaptive Secondary Education, Robert J. Loughry, Avella Area High School, RD #2, Avella, Pa. 15312

Utica Curriculum Renewal Project, Gene E. Rexford, Franklin Area School District, Box 350, Franklin, Pa. 16323

The Open and Supportive School, John J. Cairns, California Area School District, 5th & Liberty Sts., California, Pa. 15419

PENNSYLVANIA (Continued)

Individualization: Gateway to Instruction, Cyrus B. Krall, Immaculate Heart & Booker T. Washington Schools, Chester, Pa. 19013

Curriculum Analysis & Design for Open Space, Bernard R. Zaborowski, Danville Area School District, Northumberland St., Danville, Pa. 17821

Upgrading Urban Education, Paul Steffy, 225 W. Orange St., Lancaster, Pa.

Cooperative Development of Children's Creative Potential, Warner Tobin, University School, Indiana U. of Pennsylvania, Indiana, Pa. 15701

Open Concept, Samuel J. Romesberg Jr., Meyersdale Area School District, RD #3, Meyersdale, Pa. 15552

SOUTH CAROLINA

Secondary Curriculum Revision, Thomas V. Campbell, Ninety Six High School, Johnston Rd., Ninety Six, S.C. 29666

PAL (Practical Application to Learning), Theo L. Lane, 141 Main St., Chesterfield, S.C. 29720

Diagnostic-Prescriptive Teaching, Betty B. Brown, Lancaster City Schools, Lancaster, S.C. 29720

Individualizing Instruction: Placing Learning Ahead of Teaching, Louise T. Scott, 109 W. Pine St., Florence, S.C. 29501

Walk-in School, William Howell, 1716 Williams St., Columbia, S.C. 29201

SOUTH DAKOTA

Talented Students Individual Learning Ex-

periences, Robert L. Parlet, 201 E. 38th St., Sioux Falls, S.D. 57102

TEXAS

A Project To Develop and Test Follow-through Techniques for Encouraging DSII Visitors to Initiate Individualized Instruction Programs after Visitation, N. W. Kilgore, Tyler Independent School District, PO Box 2035, Tyler, Texas 75701

Project SUCCESS, Florence Currin, Brownwood State Home & School for Girls, PO Box 1267, Brownwood, Texas 76801

WASHINGTON

Help One Student to Succeed, Bill Gibbons, McLoughlin Jr. High School, 5802 MacArthur Blvd., Vancouver, Wash. 98661

Occupational Versatility, John Lavender, 15675 Ambaum Blvd., SW, Seattle, Wash. 98166

Project Success, Ralph Carlson, North Kitsap School District #400, Rte. 4, Box 846, Poulsbo, Wash. 98370

Classroom Intervention, Wayne Foley, 615 12th Ave. S., Seattle, Wash. 98144

Studio-Study Center for the Creatively Gifted, Richard Williams, 104 N. 4th Ave., Yakima, Wash. 98902

WISCONSIN

Individualization of Instruction: A Change Agent Model for Schools, William Harold Anderson, CESA 15, 545 W. Dayton St., Madison, Wis. 53703

Neenah Project, Stephen S. Udvari, 1275 Tullar Rd., Neenah, Wis. 54956

WYOMING

Project SHARE (Sharing Hastens a Realistic Education), Herb Haas, Natrona County School District #1, Casper, Wyo. 82601

Personalized Learning Opportunities, Louis Kraus, Arapahoe School, Arapahoe, Wyo. 82510

Reinforcing Personalized Instruction, Ed T. Jolovich, 436 E. 22nd Ave., Torrington, Wyo. 82240

Continuous Individualized Learning K-12, Keith Dodd, Glenrock Schools, Box 158, Glenrock, Wyo. 82637

PUERTO RICO

Outdoor Laboratory, Grouping and Individualized Teaching in a Second Unit; Improvement in Academic Achievement of Second Grade Pupils in Asomante Second Unit through Individualized Instruction and Offering Rich and Varied Learning Experiences, Victor Cartagena, Aibonito, Puerto Rico 00609

Toward Better Pupil Academic Achievement through Individualized Instruction, Independent Study, Enrichment Activities and Multisensory Activities, Ruben Vega, Barranquitas, Puerto Rico 00618

Correction of Learning Deficiencies in Mathematics through a System of Individualized Instruction, Jesus Vega Martinez, Humacao, Puerto Rico 00661

TRUST TERRITORY OF THE PACIFIC ISLANDS

Project PACIFIC, Joe C. Rice, Trust Territory of the Pacific Islands, Dept. of Education, Saipan, Mariana Islands 96950

